

## Improving Drought Tolerance In Sorghum Bicolor L Moench

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### Improving Drought Tolerance In Sorghum

The Epi genetic Control of Drought Response in Sorghum, or EPICON, focuses on understanding how sorghum, a grass related to corn, thrives on limited resources, including water. By understanding how epigenetics helps crops such as sorghum with drought tolerance, farmers could better predict how cereal crops will be impacted by climate change.

### Studying Drought Tolerance in Sorghum

Abstract. Drought stress is a major constraint to sorghum production in Kenya, especially during flowering stage. This study aimed at developing drought tolerant sorghum varieties by transferring the stay green trait that confers drought tolerance in sorghum from a mapped and characterized donor source into an adapted farmer preferred variety.

### Improving Drought Tolerance in Sorghum bicolor L. Moench ...

During droughts, bacteria help sorghum continue growing by US Department of Energy Researchers have discovered certain bacteria attached to the roots of sorghum can improve the plant's ability to...

### During droughts, bacteria help sorghum continue growing

Stay green in sorghum (*Sorghum bicolor* L. Moench) is characterized by the plant's ability to tolerate post-flowering drought stress, thereby delaying the premature leaf and plant death. It...

### (PDF) Improving Drought Tolerance in Sorghum bicolor L ...

Field screening for post-anthesis drought tolerance is, particularly, challenging as the stress is unpredictable and often confounded with diseases and stalk lodging. This study assessed the effectiveness of desiccants in simulating post-anthesis drought stress in sorghum, for potential usage in selection for drought resistance.

### Selection for Drought Tolerance in Sorghum Using ...

Such a microbe could work as a probiotic that help to improve plants' tolerance to stressful conditions brought on by pests, disease and drought. "We are operating in a black box," said Devin Coleman-Derr, a principal investigator at the USDA Agricultural Research Service in Albany, California, who studies the sorghum soil microbiome.

### Microbes in Soil Help Sorghum Stay Strong Against Droughts ...

Grain sorghum (*Sorghum bicolor* L. Moench) is a genetically diverse cereal crop grown in many semiarid regions of the world. Improving drought tolerance in sorghum is of prime importance. An association panel of about 300 sorghum genotypes from different races, representative of sorghum globally, was assembled for genetic studies.

### Characterization of sorghum genotypes for traits related ...

Similar MARS breeding programmes are being conducted at several other international institutes including ICRISAT, the French Centre for International Agricultural Research (CIRAD) and University of California-Riverside, USA for improving drought tolerance in chickpea, sorghum and cowpea, respectively (see Kulwal et al. 2011).

### Integrated genomics, physiology and breeding approaches ...

In this study, SbWRKY30 of sorghum was cloned, and its expression was induced significantly by drought stress. Experiments with heterologous transgenic plants showed that SbWRKY30 enhanced drought tolerance in Arabidopsis and rice by increasing the transcription of drought stress-responsive genes.

### SbWRKY30 enhances the drought tolerance of plants and ...

We have been conducting a genetic research program directed at developing a better understanding of drought tolerance in sorghum [*Sorghum bicolor* (L.) Moench]. Several quantitative trait loci (QTL) associated with pre-flowering and post-flowering drought tolerance were previously identified in a recombinant inbred mapping population.

### Evaluation of Near-Isogenic Sorghum Lines Contrasting for ...

SORGHUM DROUGHT TOLERANCE BIOASSAY DEVELOPED Researchers at the Cropping Systems Research Laboratory developed an assay to identify "stay-green" sorghums without the requirement of post flowering water stress.

### Technology: What is in the Sorghum Pipeline

Further, in sorghum, drought tolerance is defined as demonstrating high yields under drought stress, which both of these varieties have been shown to do under their respective drought stresses (7, 25 ↓ - 27). Cumulatively, these points ensure that the plants exhibit drought tolerance.

### Transcriptomic analysis of field-droughted sorghum from ...

THURSDAY, JANUARY 16, 2020 Sorghum is an important food crop due, in part, to its extreme drought-tolerance. This characteristic makes it an ideal model for demonstrating how biological entities are able to continuously track environmental changes. A new study takes a big stride in revealing some mechanisms underlying drought tolerance.

### Sorghum Manages Gene Expression to Resist Drought | The ...

Further support was given by FNCA for drought tolerance in soybean and sorghum, and from JSPS for irradiating sorghum seeds with ion-beams in Japan. The breeding objectives were to improve sorghum genotypes for their yield and quality, and tolerance to adverse conditions brought about by climate change, such as prolonged drought and soil acidity.

### Sorghum Mutation Breeding for Improving Tolerance to ...

New research from the Department of Plant and Microbial Biology (PMB) demonstrates that exposing sorghum plants to drought conditions can shift the balance between specific types of microorganisms found within their root systems. The study, published today in PNAS, suggests that drought plays a role in restructuring the development of the early root microbiome, a finding that could help scientists develop crops that are more resistant to climate change.

**Drought treatment restructures plants' microbiomes | UC ...**

The effects of silicon application on the drought tolerance of sorghum (*Sorghum bicolor* (L.) Moench) were investigated for two cultivars differing in drought susceptibility. Silicon application ameliorated the decrease in dry weight under drought stress conditions, but had no effect on dry matter production under wet conditions.

**Application of silicon enhanced drought tolerance in ...**

*Sorghum bicolor* (L.) Moench is an African grass that adroitly handles droughts, floods and poor soils. This is the first paper that describes sorghum's response to drought, from a large-scale field experiment to uncover the mechanisms behind sorghum's capacity to produce high yields despite drought conditions.

**Dealing with Drought: Uncovering Sorghum's Secrets - DOE ...**

The stay-green trait enhances grain yield in sorghum under post-anthesis drought. (A) Relationship between green leaf dry mass at 25 days after anthesis and grain yield in a set of 160 recombinant inbred lines from the cross between BQL39 (senescent) and BQL41 (stay-green), grown during the post-rainy season at Patancheru, India.

**Drought adaptation of stay-green sorghum is associated ...**

The five-year study, funded with a \$12.3 million grant from the Department of Energy, aims to tease out the genetics of drought tolerance in sorghum and its associated microbes. Using sorghum as a model, scientists hope the research will help them understand and improve drought tolerance in other crops as well.

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