BOOSTER

BOOSTING DROUGHT TOLERANCE IN KEY CEREALS
IN THE ERA OF CLIMATE CHANGE

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START
1st May 2023

DURATION
48 months

EXPECTED FUNDING
€ 4.9 million

FRAMEWORK PROGRAMME
European Commision´s Horizon Europe

WHAT IS THE AIM OF BOOSTER?

To enhance drought tolerance in maize and teff by utilizing natural genetic variations and biostimulants derived from living organisms to develop new varieties of drought-tolerant agricultural crops.

BOOSTER PLANT SPECIES:

EUROPEAN MAIZE

(Zea mays): globally utilized cereal.

ETHIOPIAN TEFF

(Eragrostis teff): orphan cereal.

SOUTH AFRICAN LOVEGRASS

(Eragrostis nindensis): desiccation-tolerant cereal found in the wild.

STRATEGIES:

Identification of natural genetic variation within cis-regulatory elements (CREs) regulating gene expression, followed by assessing their association with drought tolerance.

Development of microbial biostimulants, plant growth-promoting rhizobacteria (PGPR) sourced from drought-affected soils, to enhance crop resilience without reducing yield.

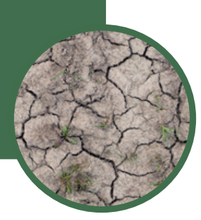
Transfer of genetic traits from more drought-tolerant species (teff and E. nindensis) to less tolerant species (maize) to improve drought resistance.

Use of seaweed extracts (SWEs) derived from brown algae to prime plant drought responses and offer a sustainable source of raw material.

Implementation of a synergistic approach that integrates genetic and biostimulant improvements to mitigate crop yield losses.

IMPACT:

Mitigation of the decreasing trend of biomass resources derived from maize and teff, for sustainable bio-based production, amid future extreme drought conditions caused by climate change.



Highly transferable strategies for:

- Enhancing drought resilience in other crops or in the same crops cultivated in different countries (e.g., maize in Africa).
- Using the novel “CRE variants” approach to improve quantitative traits in any crops.

Strengthened competitiveness, of both European and African bioeconomy-based industries and improved yield stability with reduced irrigation requirements.

PARTNERS:

BELGIUM: VIB, APHEA bio
IRELAND: BioAtlantis
GERMANY: hhu, KWS
SWITZERLAND: u b, Quantis
ITALY: crea, EU CORE
SPAIN: ID consortium
BULGARIA: CPSBB
USA: Michigan State University
ETHIOPIA: EIAR
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