Corpoica
Corporación Colombiana de Investigación Agropecuaria

Response to Abiotic stress

understanding and using plant natural strategies to mitigate global climate change

CzechGlobe
Centrum výzkumu globální změny AV ČR, v. v. i.

esf evropský sociální fond v ČR
EVROPSKÁ UNIE
MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY
OP Vzdělávání pro konkurenceschopnost
INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

MINAGRICULTURA

TODOS POR UN NUEVO PAÍS
PAZ EQUIDAD EDUCACIÓN

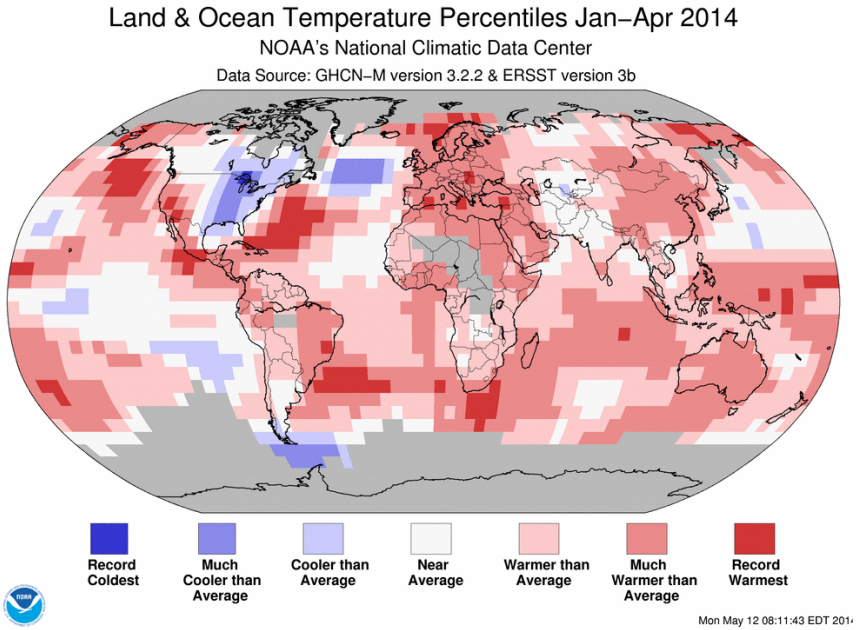
SC-CER228920

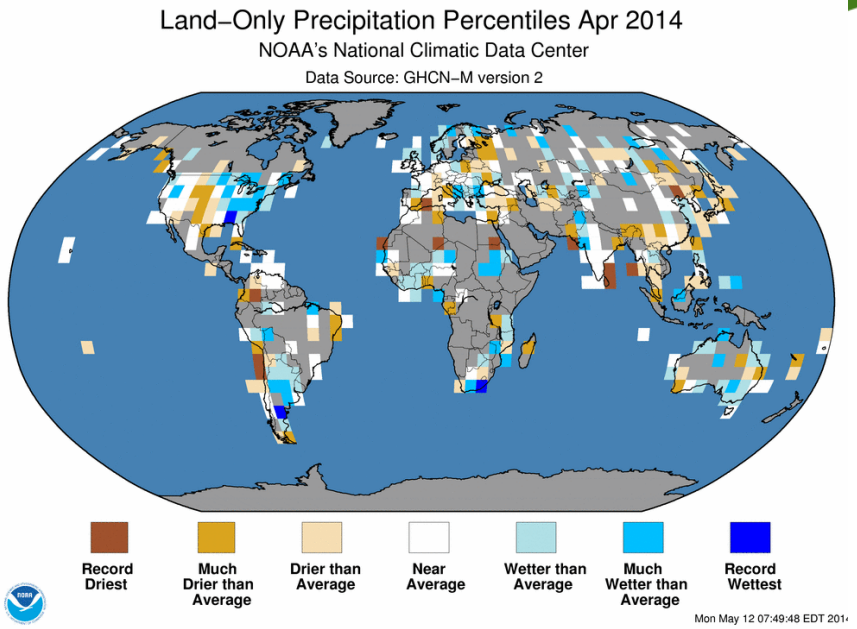
26.06.2015

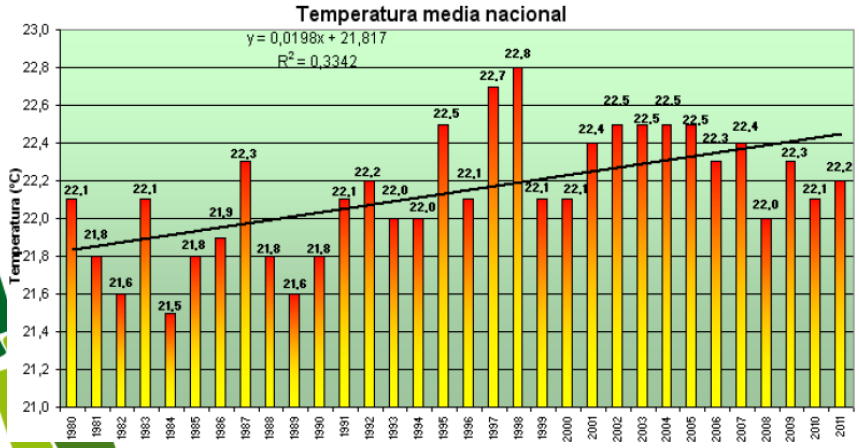
Response to abiotic stress

- Global Climate Change and Agriculture
- Cellular and physiological modifications in response to abiotic stress
- understanding and using plant natural strategies to mitigate global climate change

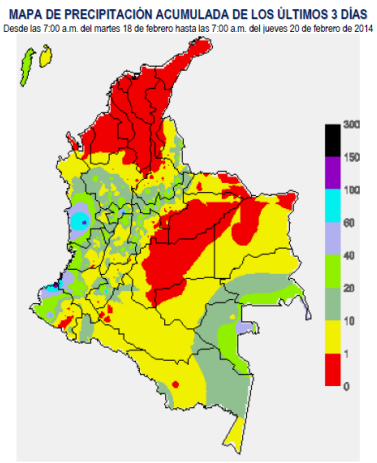
Global Climate Change

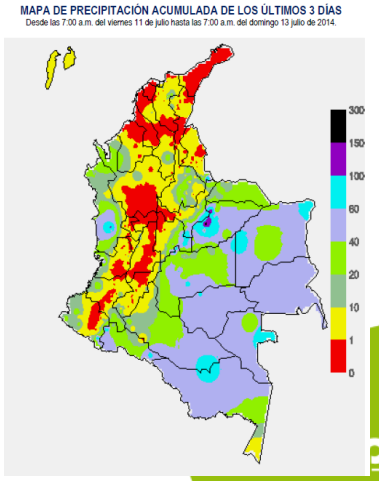




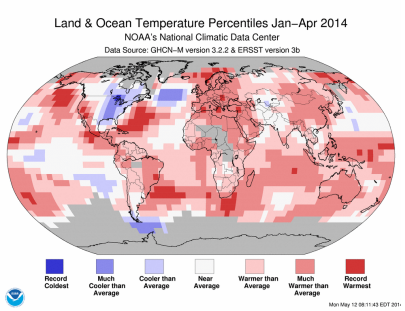


Tendencia de la temperatura. Fuente: IDEAM

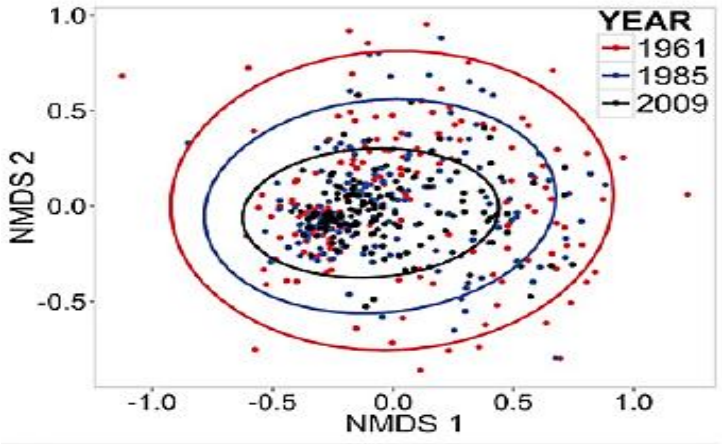


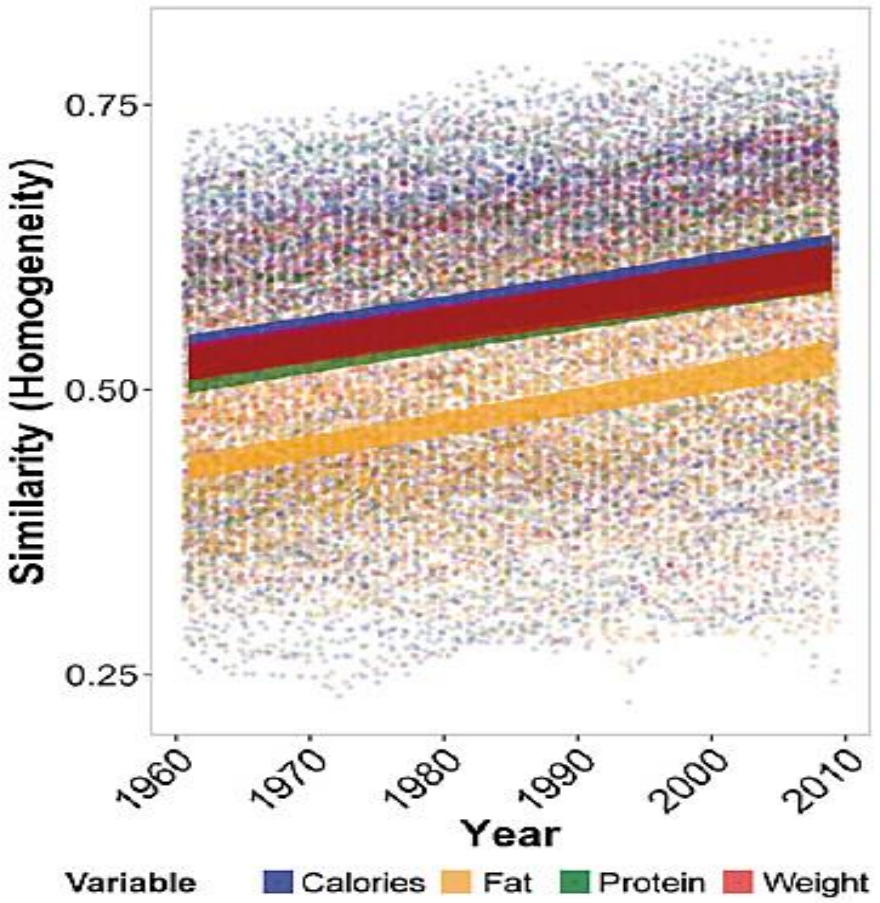


Climate Change and Food Security



The challenge to produce under stress conditions should be linked also to ensure food with high nutritional quality





PNAs (2014). Early Edition doi/10.1073/pnas.1313490111

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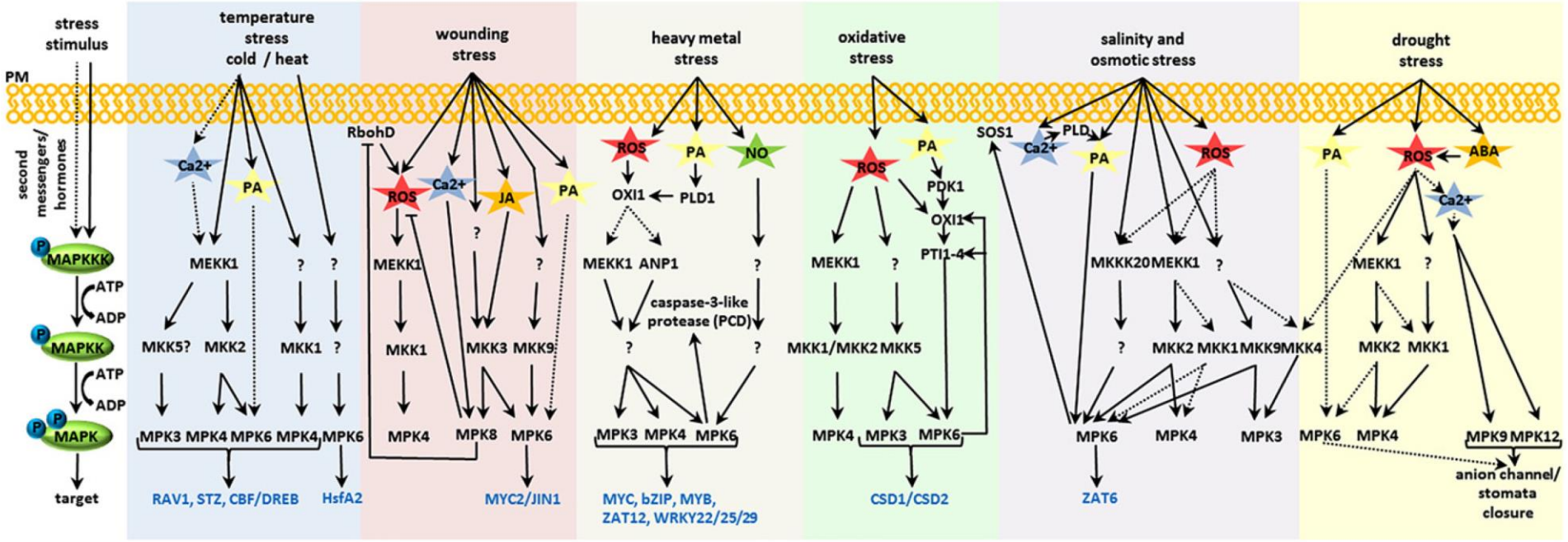
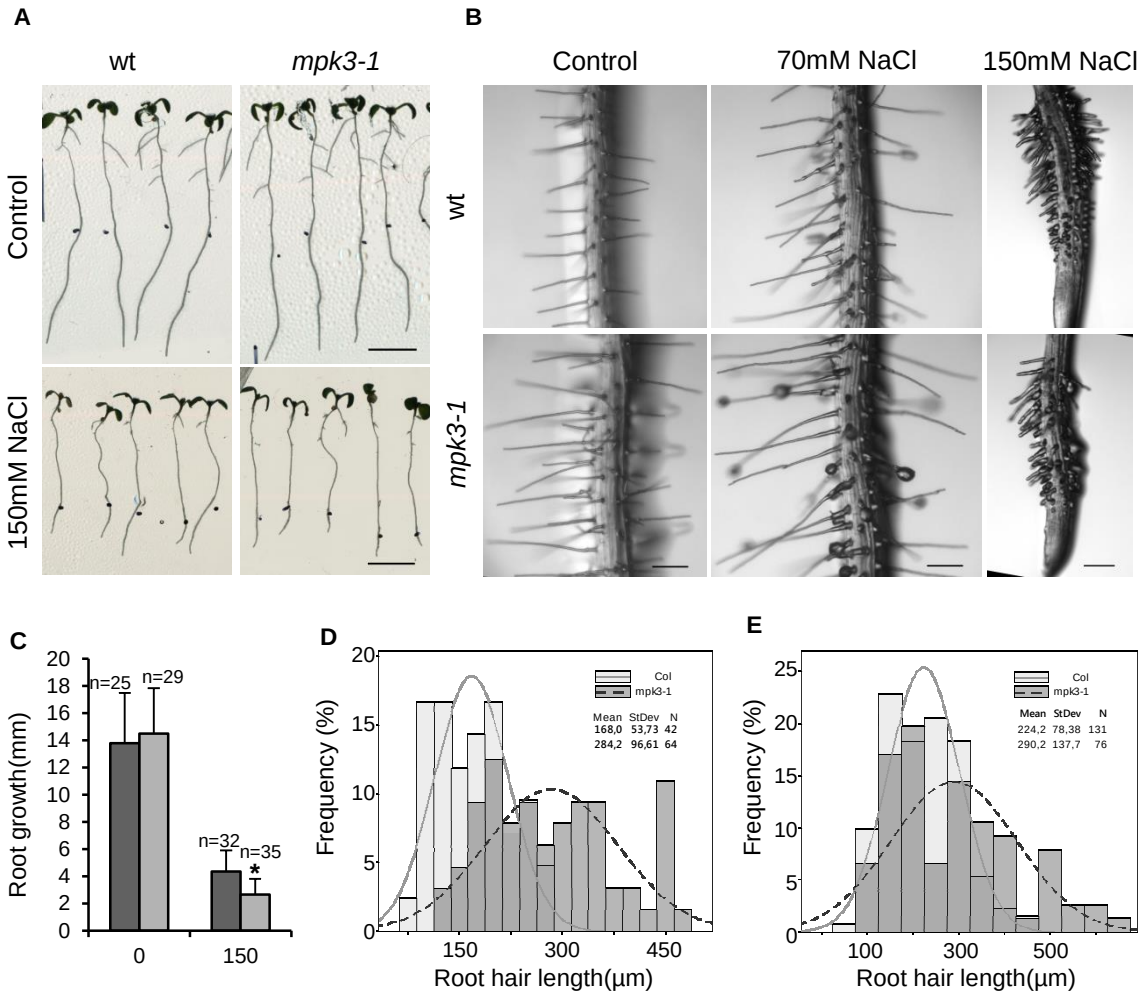
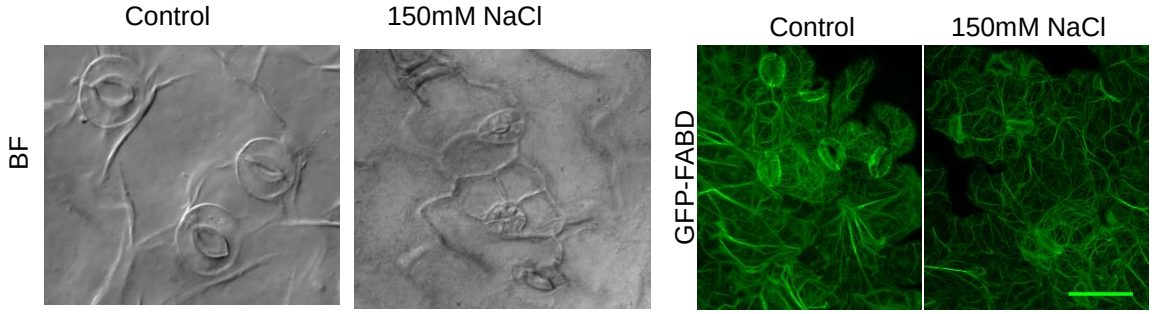
Plant signaling pathways in response to stress stimulus

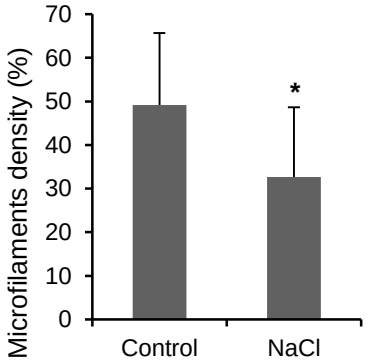


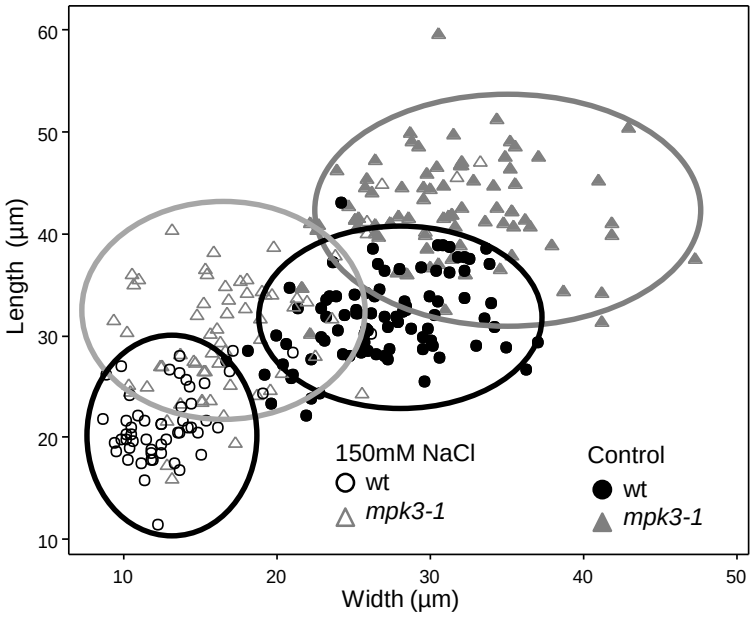
Response to salt stress



Cell alterations induced by salt stress

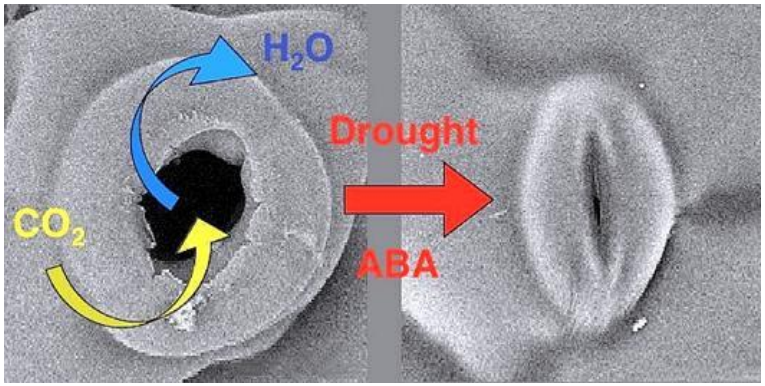


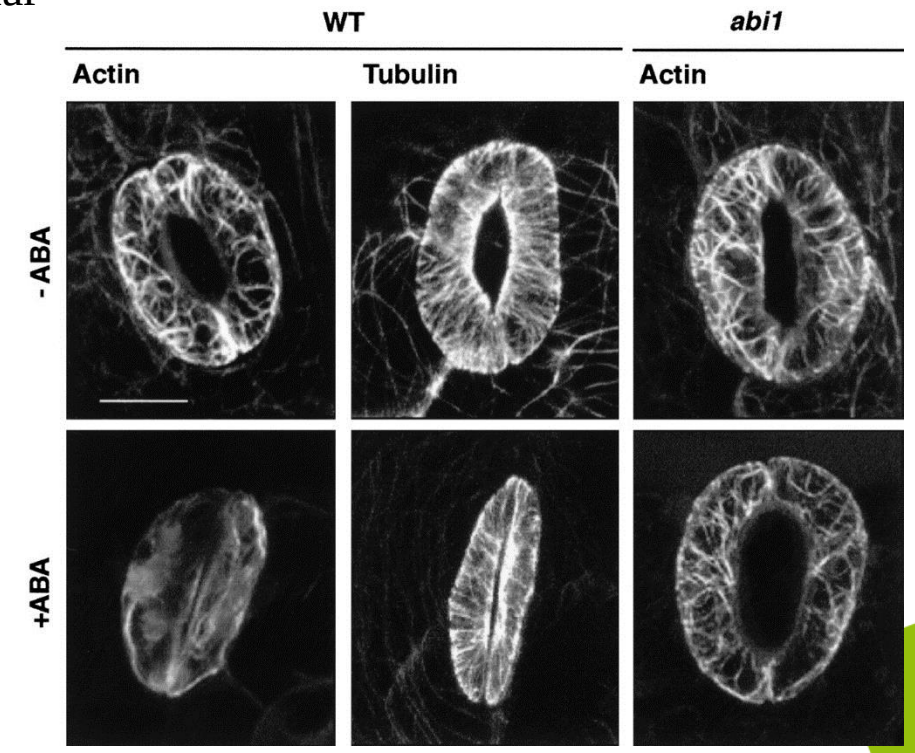




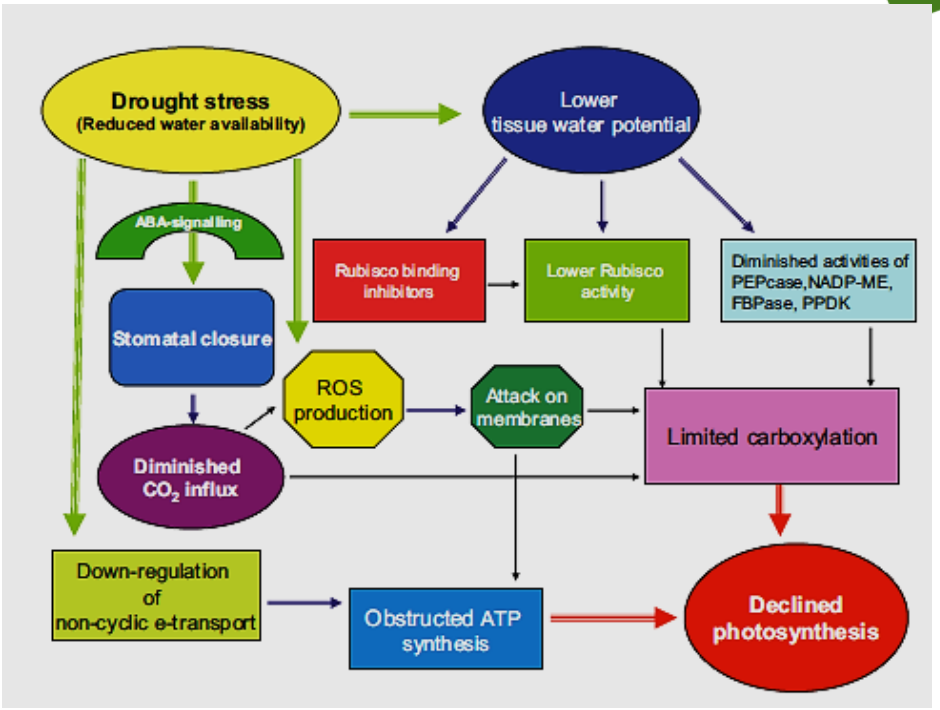
ABA-related processes in response to stress conditions

pH changes promote the movement of accumulated abscisic acid (ABA) from vascular tissue to guard cells. ABA induces stomata closure by induction of ions and water transport, regulation of several transcription factors and genes involved in oxidative stress





Physiological response



Agro. Sustain. Dev. (2009) 29:185-212

Alterations in plant development and yield reduction

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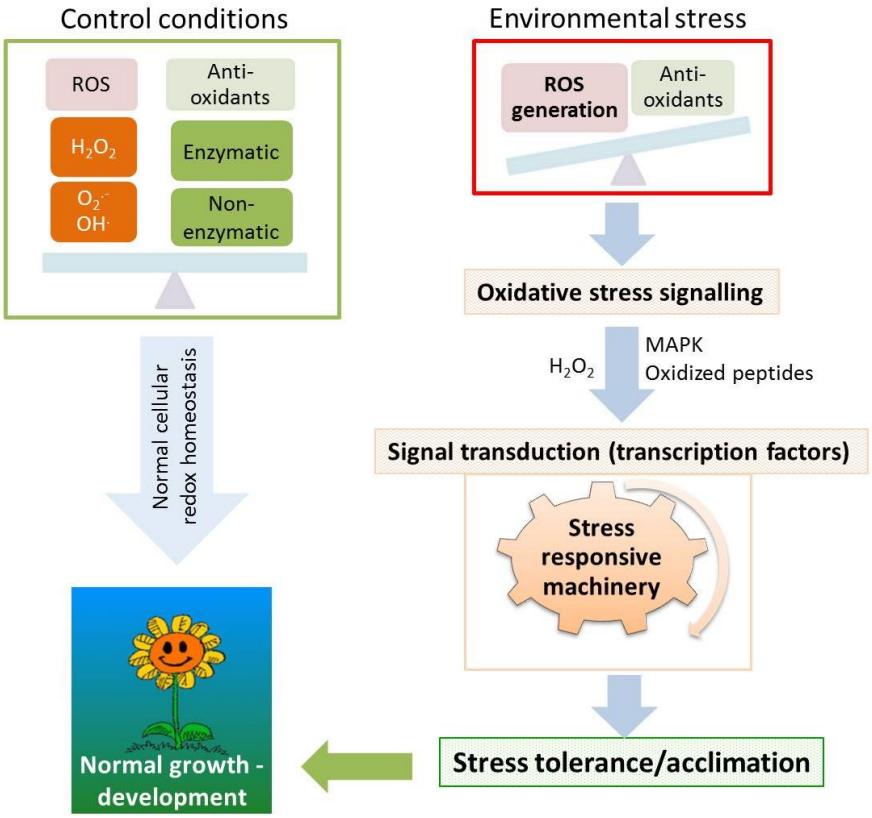
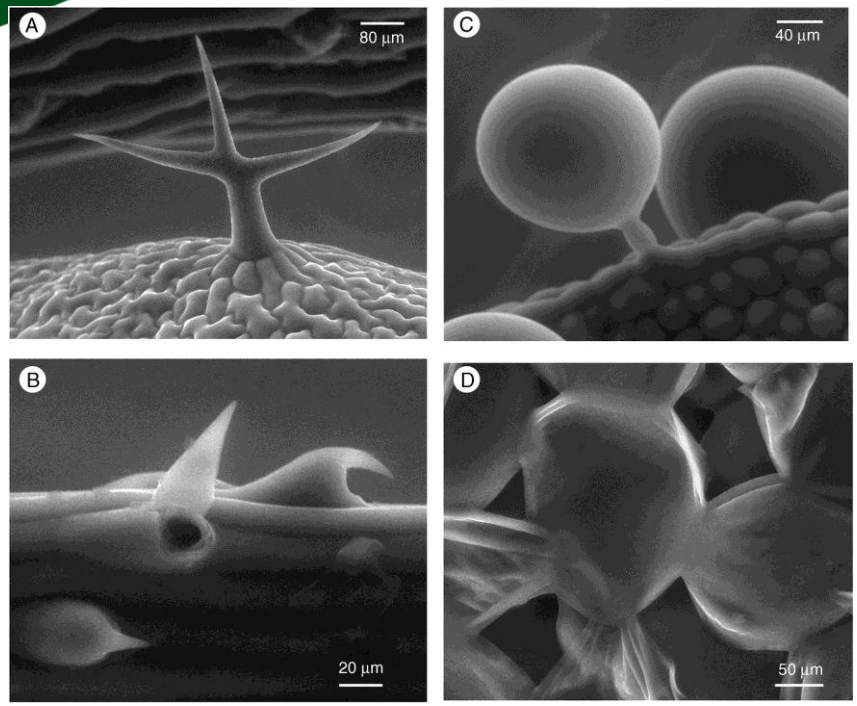
Reductant-Antioxidant-Oxidant interactions in redox homeostasis signaling



Mechanisms in halophytes plants

Ann Bot (2013)112 (7): 1209-1221.

Mechanisms in halophytes plants



Trichomes (A, B) on the abaxial surface of two glycophytes (arabidopsis and barley)

Salt bladders (C, D) on the abaxial surface of two halophytes (quinoa and Atriplex)

- Ions accumulation and transport
- Increase of cell and vacuolar transport of Na^+ and K^+
- High antioxidants content
- Lower stomata density

Ann Bot (2013)112 (7): 1209-1221.

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Sweetpotato *(Ipomoea batatas* Lam*)*

Cassava *(Manihot esculenta* Crantz*)*







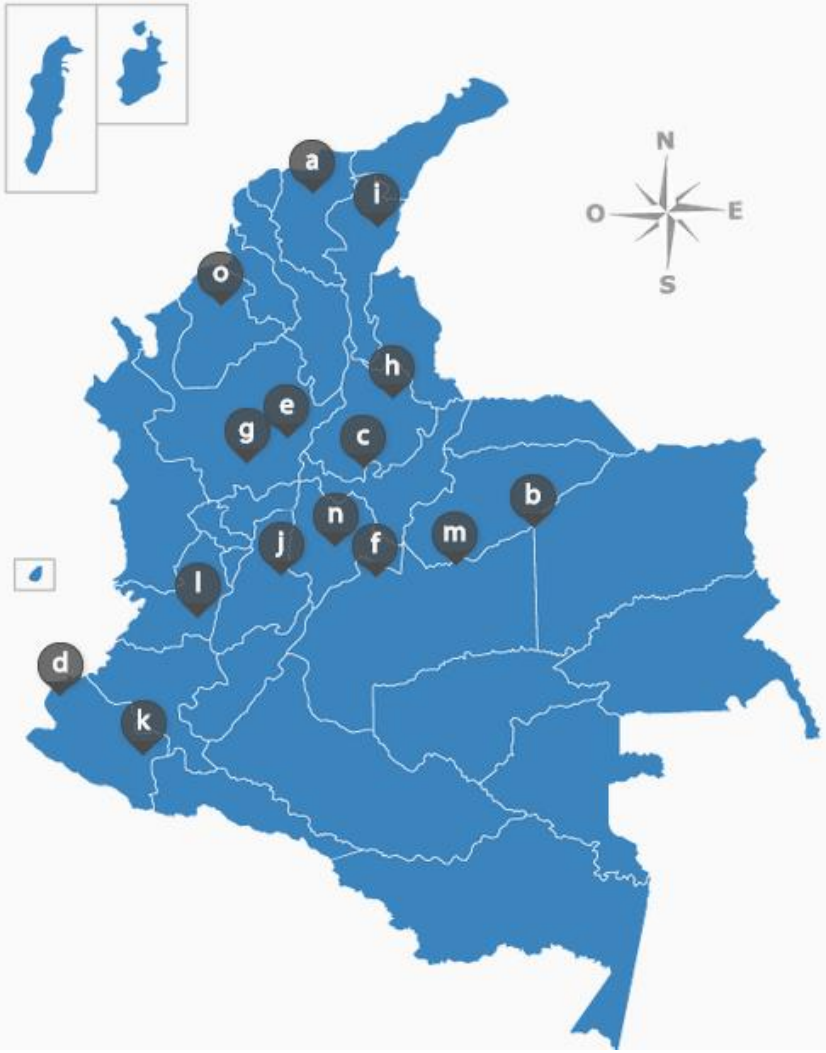
CORPOICA (from Spanish acronym of Corporacion Colombiana de Investigacion Agropecuaria), is a Colombian research institute that in partnership with several agents (CIAT, universities, etc) are driving the agricultural research in Colombia.

CORPOICA

- The mission of CORPOICA is promove a technical change and innovation in the agriculture by research and transference.
- CORPOICA´staff includes about 400 scientists. CORPOICA is supported by Colombian Agricultural Ministry.
- CORPOICA has presence along Colombian territory by 15 research centers.

Our research centers in Colombia

a C.I. Caribia
b C.I. Carimagua
d C.I. El Mira
e C.I. El Nus
f C.I. La Libertad
g C.I. La Selva
h C.I. La Suiza
l C.I. Motilonia
j C.I. Nataima
k C.I. Obonuco
i C.I. Palmira
n C.I. Tibaitatá
o C.I. Turipaná



Corpoica

Crops research focused on…

- Cacao
- Tropical fruits
- Vegetables and medicinal plants
- Perenne crops
- Roots and tubers
- Annual crops
- and Livestock

Research fields…

- Plant pathology
- Entomology
- Plant breeding
- Crop management
- Climate change
- Rural development
- Post harvest technologies

Perspectives

- CORPOICA would like to collaborate with academic and research partners to conduct high-quality research and translate the results into development impact for agriculture
- CORPOICA is open to receive annually colombian and foreign students to conduct their MSc, Ph.D tesis or training and researchers training.

Acknowledgments