

Valagro experience on abiotic stress thanks to Geapower.

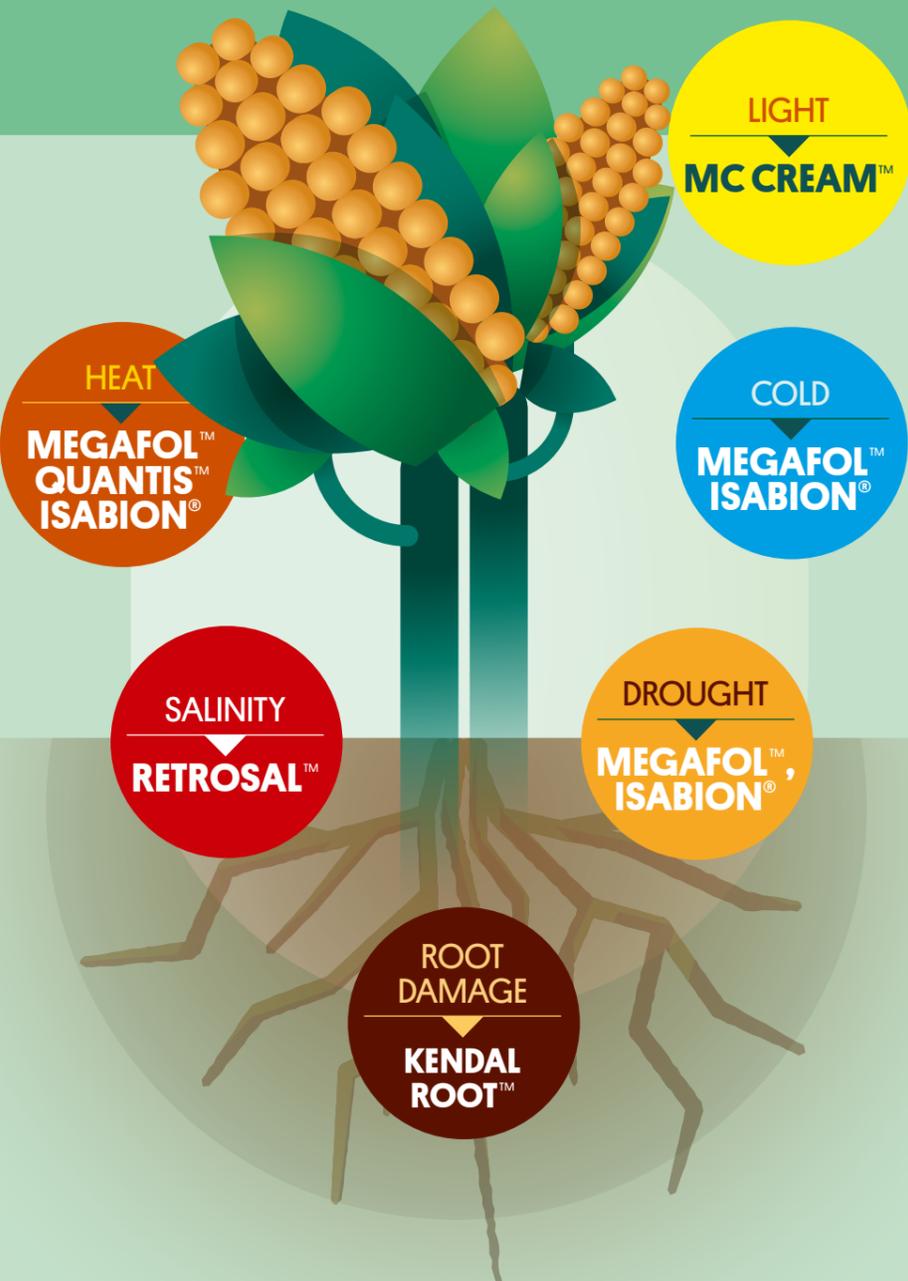


GEAPOW is the technological platform to design and develop biostimulants that orchestrate plant metabolism and response.



Biostimulants benefit plants biological processes by modulating plant stress response during key vegetative and reproductive phases.

Sharing experience to **manage abiotic stress.**



for every stress
we have a SOLUTION



ADDRESS THE STRESS is a project which promotes the sharing of knowledge on the topic of abiotic stress through targeted activities and dedicated forums with the participation of experts on this issue.



Abiotic stress in agriculture

Plant environmental (abiotic) stresses constitute a major limitation to agricultural production. Crop production is hardly ever free of environmental stresses. The major plant environmental stresses of contemporary economical importance worldwide are drought, cold (chilling and freezing), heat, salinity, root damage, soil mineral deficiency and soil toxicity.

In many regions of the world, climate change is leading to increased exposure to abiotic stresses in agriculture. The most obvious effects are warmer temperatures, more frequent episodes of extreme heat, increased drought conditions, desertification, and in some regions, more frequent and extreme storms and flooding.

PHYSICAL

- High and low temperatures
- Infrared and ultraviolet radiation
- Drought and flooding

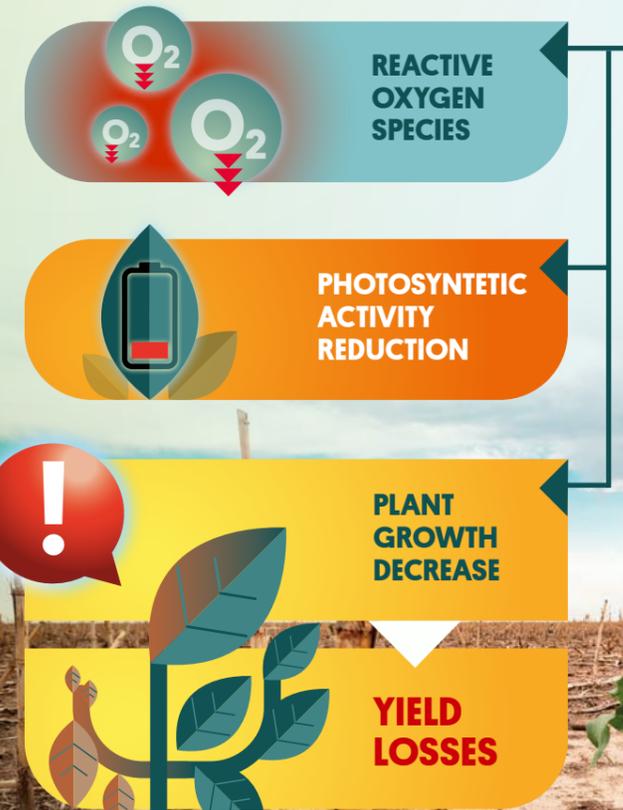
CHEMICAL

- Air pollution
- Pesticides
- Toxins
- Soil and water pH
- Salinity

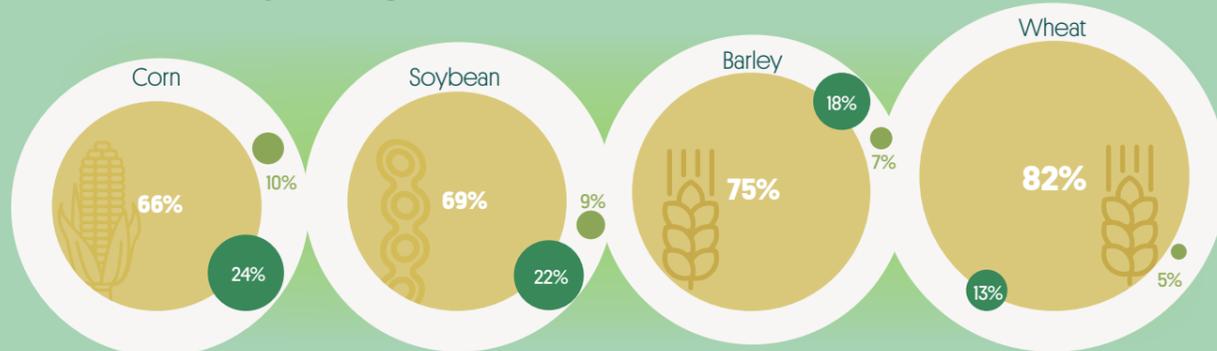
Stress response

PHYSICAL / CHEMICAL ABIOTIC STRESS

In case of abiotic stress plants need to regulate and balance their energetic level in order to respond to the stress, activating different metabolic pathways. There is an increase in the production of Reactive Oxygen Species and reduction of photosynthesis that lead to plant growth reduction and to dramatical yield loss.



Yield impact from abiotic stress on major crops:



Source: Biochemistry and Molecular Biology of Plants, Buchanan, Grussem, Jones, American Society of Plant Physiologists.

A major challenge in agriculture practice today is how to cope with plant environmental stress in economical and an environmentally sustainable approach.

Losses due to biotic and abiotic stresses*



*Avg production from 2002-2013 and losses due to biotic and abiotic stresses on corn. Biotic stresses include diseases, insects and weeds. Abiotic stresses include, but are not limited to, drought, salinity, flooding, and extreme temperatures. Source: FAOSTATS 2013 and Bray et al., 2002.

This is an average of 11 years of yield loss in corn due to biotic and abiotic stresses. We have 66% of estimated abiotic losses vs 10% due to biotic losses. While for biotic stress almost farmers use specific pesticides to save yield loss, for abiotic stress there is not the sensitivity to the problem and in the use of Biostimulants to preserve plant yield and food production.