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IWGSC Webinar: Understanding abiotic stress signalling in wheat through phosphoproteomics *Abiotic Stress \u0026 Fortification Effects in Plants with Roland Sier* **How do Plants Handle Stress? | #AlwaysCurious Abiotic Stress Tolerance In Crop**

Tolerance against abiotic stresses is a complex phenomenon involving an array of mechanisms, and TU may modulate several of these. An understanding of TU-induced tolerance mechanisms may help improve crop yield under stress conditions. However, the potential mechanisms involved in TU-induced plant stress tolerance are still elusive.

**Potential Mechanisms of Abiotic Stress**

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## **Tolerance in Crop ...**

Abscisic acid is the most important phytohormone that confers abiotic stress tolerance in crop plants (Shinozaki and Yamaguchi-Shinozaki, 2000; Schroeder et al., 2001). In stress conditions like drought, extreme temperature, and high salinity, content in plants increases considerably, inspiring stress-tolerance effects that help plants, adapt, and survive under these stressful situations ( Ng et al., 2014 ).

## **Abscisic Acid and Abiotic Stress Tolerance in Crop Plants**

The development, growth, and productivity of field crops are negatively influenced by abiotic stresses resulting in significant losses in crop yield. Therefore, understanding tolerance of agronomic crops to abiotic stress factors like drought, salinity, heat, and chilling is of paramount

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importance for plant scientists for effective management.

## **Abiotic Stress Tolerance in Field Crops: Integration of ...**

Abscisic acid is the most important phytohormone that confers abiotic stress tolerance in crop plants (Shinozaki and Yamaguchi- Shinozaki,2000;Schroeder et al.,2001).

## **Abscisic Acid and Abiotic Stress Tolerance in Crop Plants**

Abiotic stress tolerance is complex, but as phenotyping technologies improve, components that contribute to abiotic stress tolerance can be quantified with increasing ease. In parallel with these phenomics advances, genetic approaches with more complex genomes are becoming increasingly tractable as genomic information in non-model crops

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Plants Breeding And Biotechnology  
increases and even whole crop genomes can be re-sequenced.

## **Genetic analysis of abiotic stress tolerance in crops ...**

Here, we highlight the latest advances in our understanding of the role of hormones and hormone cross-talk in plant responses to abiotic stresses. We then discuss the recent progress in the engineering of hormone-associated genes aimed at improving crop stress tolerance.

Hormones and the response to abiotic stress

## **Hormone balance and abiotic stress tolerance in crop ...**

survival under abiotic stress are essential for maintaining crop growth and production levels in agricultural sectors. Abiotic stress defenses can be explored and understood using molecular genetics.

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Stress defense systems have been well studied with such methods, with a focus on stress tolerance [28].

## **Molecular Markers Improve Abiotic Stress Tolerance in ...**

The most remarkable example to date of a successfully commercialized GM crop improved with respect to abiotic stress tolerance is represented by Monsanto's DroughtGard™ maize, released in 2013 in the United States. The transgene introduced into this maize encodes cold shock protein B (CSPB) and was isolated from the bacterium *Bacillus subtilis*. CSPB acts as an RNA chaperone, helping to maintain physiological performance during a stress episode by binding to and then unfolding RNA molecules ...

**Abiotic Stress - an overview | ScienceDirect Topics**



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Abstract Various abiotic stresses lead to the overproduction of reactive oxygen species (ROS) in plants which are highly reactive and toxic and cause damage to proteins, lipids, carbohydrates and DNA which ultimately results in oxidative stress.

## **Reactive oxygen species and antioxidant machinery in ...**

Various abiotic stresses lead to the overproduction of reactive oxygen species (ROS) in plants which are highly reactive and toxic and cause damage to proteins, lipids, carbohydrates, DNA which ultimately results in oxidative stress. The antioxidant defense machinery protects plants against oxidative stress damages. Plants possess very efficient enzymatic (superoxide dismutase, SOD; catalase, CAT; ascorbate peroxidase, APX; glutathione reductase, GR;

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monodehydroascorbate reductase,  
MDHAR ...

## **Reactive oxygen species and antioxidant machinery in ...**

281 Crop Phenomics for Abiotic Stress Tolerance in Crop Plants Thermal imaging cameras are sensitive to a spectral range of 3 – 14  $\mu$ m in the infrared region; within this wavelength, 3 – 5 ...

## **(PDF) Crop Phenomics for Abiotic Stress Tolerance in Crop ...**

Chemical priming has been proposed to increase tolerance to abiotic stresses in crop plants. In this method, which is analogous to vaccination, stress-inducing chemical agents are introduced to the plant in brief doses so that the plant begins preparing defense mechanisms.

## **Abiotic stress - Wikipedia**

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This special issue of Molecular Plant, we believe, reflects many of the aspects of this movement toward successful crop improvement for stress tolerance (more accurately called yield stability). Several reports, including those by Yang et al., Agarwal et al., Chai et al., Fuji and Zhu, Kumar et al., Quist et al., Dong et al., and Ballachandra et al., advance our knowledge of the four fundamental processes controlling stress tolerance and, in many, indicate the participation of new loci in ...

## **Abiotic Stress Tolerance: From Gene Discovery in Model ...**

As a general approach, T genes are deployed to achieve abiotic stress tolerance in plants; however, the expression of S genes sometimes interferes with the biological function of these T genes. Therefore, silencing S

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genes to disturb their function may help plants to adjust their physiological and biochemical pathways for abiotic stress tolerance. Although there are numerous reports of success in achieving biotic stress resistance in plants, the same is not true for abiotic stresses.

## **Engineering abiotic stress tolerance via CRISPR/ Cas ...**

Abiotic stress creates adverse effect on multiple procedures of morphology, biochemistry and physiology that are directly connected with growth and yield of plant. Abiotic stress are quantitative trait hence genes linked to these traits can be identified and used to select desirable alleles responsible for tolerance in plant.

## **Effect of Abiotic Stress on Crops | IntechOpen**

Biological Networks Underlying Abiotic

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Stress Tolerance in Temperate Crops--A Proteomic Perspective Abiotic stress factors, especially low temperatures, drought, and salinity, represent the major constraints limiting agricultural production in temperate climate.

## **Biological Networks Underlying Abiotic Stress Tolerance in ...**

In field conditions, crops are adversely affected by a wide range of abiotic stresses including drought, cold, salt, and heat, as well as biotic stresses including pests and pathogens. These stresses can have a marked effect on crop yield. The present and future effects of climate change necessitate the improvement of crop stress tolerance.

## **Transcription Factors Associated with Abiotic and Biotic ...**

Drought, salinity, and extreme

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temperatures are the key abiotic stress factors that negatively influence plant growth, leading to loss of agricultural productivity worldwide. Plants during the course of their evolution develop biochemical and physiological mechanisms to withstand different abiotic stresses.

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