

Abiotic Stress Tolerance In Crop Plants Breeding And Biotechnology

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Abiotic Stress 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 conditlons 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

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 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).

Abscisic Acid and Abiotic Stress Tolerance in Crop Plants

Transgenic A. thaliana plants constitutively overexpressing a GA-responsive gene from Fagus sylvatica encoding FgGASA4, a member of the GA 3 gene family, showed improved tolerance under abiotic stress and the stress tolerance was correlated with increased endogenous levels of SA [30].

Hormone balance and abiotic stress tolerance in crop ...

The long-term goal of crop improvement for abiotic stress tolerance in plants is a traditional objective of breeders. World population is expected to increase by 1.8 billion as of 2030 and by 2.5...

(PDF) Breeding for Abiotic Stress Tolerance in Crop Plants

The performance of any crop under a particular environment is the resultant of the action of under abiotic stress (Priou globally (Pennisi, 2008) with grain yield (Edmeades Correspondence Shailja Sharma Department of Crop Improvement, CSKHPKV, Palampur, Himachal Pradesh, India QTL mapping for abiotic stress tolerance in maize: A brief review

QTL mapping for abiotic stress tolerance in maize: A brief ...

Abstract Abiotic stresses are both serious in magnitude and widespread in occurrence and thus pose major hurdles to attaining higher crop productivity. In rice, salinity follows only drought stress...

(PDF) Varietal Improvement for Abiotic Stress Tolerance in ...

Reactive oxygen species and antioxidant machinery in abiotic stress tolerance in crop plants. Plant Physiol. Biochem. 48 909-930. 10.1016/j.plaphy.2010.08.016 [Google Scholar] Hirayama T., Shinozaki K. (2010). Research on plant abiotic stress responses in the post-genome era: past, present and future.

ROS Regulation During Abiotic Stress Responses in Crop Plants

Crop yields are destabilized by suboptimal growth conditions such as floods, droughts, air pollution, nutrient deficiency and toxic ion exposure. Effective abiotic stress adaptation loci usually...

Genetic mechanisms of abiotic stress tolerance that ...

This special issue will comprise the following aspects: • Recent biotechnological developments in crop improvement and abiotic stress tolerance • Signaling molecules in plants growth and developments and abiotic stress management • Nutrient regulation in crop improvements and abiotic stress tolerance • Role of phytohormonal regulation ...

Recent Biotechnological Avenues in Crop Improvement and ...

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

Hormone balance and abiotic stress tolerance in crop plants Peleg and Blumwald 291 www.sciencedirect.com Current Opinion in Plant Biology 2011, 14:290-295 plays a crucial role in drought-stress-inducible ABA biosynthesis, and T-DNA insertional nced3 mutants have defects in ABA accumulation under drought stress and impaired drought tolerance.

Hormone balance and abiotic stress tolerance in crop plants

Drought is a complicated abiotic stress factor with severe effects on rice growth and production. Weedy rice is a valuable genetic resource that possesses a strong capacity for drought tolerance ...

Parallel reaction monitoring revealed tolerance to drought ...

This book brings together recent advances in the area of abiotic stress tolerance in various vegetables, fruit crops, plantation crops and tuber crops. The main challenges to improving the productivity of horticultural crops are the different types of abiotic stresses generally caused by climate change at the regional and global level.

Abiotic Stress Physiology of Horticultural Crops ...

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 importance for plant scientists for effective management.

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

These factors can include salinity, drought, heat, cold, flooding, heavy metals, and UV radiation which pose serious threats to the sustainability of crop yields. Since abiotic stresses are major constraints for crop production, finding the approaches to enhance stress tolerance is crucial to increase crop production and increase food security.

Approaches for Enhancing Abiotic Stress Tolerance In ...

Nanoparticles (NPs) are defined as particles less than 100 nm in at least one dimension. CuO NPs have possible applications in agriculture as micronutrient sources, pesticides, and enhancers of crop stress tolerance. Here, three aspects of CuO NP agricultural applications are studied: 1) the potential of CuO NPs to prevent wheat lodging-when crops irreversibly fall over: 2) CuO NP-induced ...

"Protecting Crops from Abiotic Stress: Copper Oxide ...

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.