Cereals Under Abiotic Stress: An Overview

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Açıklama: The changing climate poses the threat to yield stability of the major food crops around the world. Drought, salinity, cold or freezing temperatures, air pollution, intense light, pesticide pollution, light fluctuations, UV-B irradiation, wounding, ozone exposure, osmotic shock, heavy metals, etc. have become serious threats to agriculture production due to increased severity. The combination of abiotic stress and interactions with biotic stresses makes the situation worse and more complex to solve. In all stress conditions, photosynthesis is a highly affected activity. This, of course, eventually significantly affects crop production and quality. Comprehensive knowledge of the biochemical and physiological disorders related to each stress needs to be studied in detail. Perception of the stresses at the cellular level activates a cascade of signaling networks associated with stress tolerance. Phytohormones play a central role in …

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Nanotechnology and Its Role in Cereal Crops under Abiotic Stress

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Açıklama: Crops confront various types of abiotic stress such as extreme temperatures (freezing, cold, heat), water availability (drought, flooding), and ion toxicity (salinity, heavy metals) which adversely affect the plant growth and productivity worldwide. These abiotic stresses are interconnected to osmotic stress that results in the disruption of ion distribution and cell homeostasis. The use of nanoscale materials carries an immense scope in the mitigation of a multitude of biotic and abiotic stresses by acting on the common pathway or regulators. The characteristic structural dimensions provide nanoparticles (NPs) the properties of enzymes and cofactors that enable the NPs to participate in the metabolic pathway network. Penetration of NPs inside the extracellular or intracellular environment triggers enzymatic responses and influences the redox homeostasis that helps to augment the antioxidant pathway in plants. For instance …

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