



# CALL FOR PAPERS

Owing to their inability to move, plants face diverse array of environmental changes which may be often sudden and detrimental to their growth and productivity. In particular, crop plants are bound to face adverse growth conditions dominated by varied abiotic factors in different agronomic regions of the world. Notably, the generation of different reactive oxygen species (ROS) is an unavoidable phenomenon in plant life. Nevertheless, nonmetabolized or elevated ROS can severely disturb normal cellular functions and tilt redox balance in favor of oxidative stress and eventually the oxidation of major cellular proteins, lipids, and other biomolecules. Previous conditions, in turn, can severely interfere with vital plant physiological/biochemical processes and functions that eventually compromise with agronomic output in terms of yield/yield components and quality of edible parts.

Though some responses of crop plants to different abiotic stresses are common, the manifestation of each stress factor has some unique features which are different in different crop groups such as cereals, millets, legumes, vegetables, oil seeds, horticultural crops, and medicinal and aromatic crops. To mitigate stressor-induced damage, plants have evolved wide array of notable tolerance mechanisms among which are antioxidant defense, maneuvering through alteration in plant physiological and metabolic processes, and modulation in gene expressions. The process is interconnected and complicated posing a serious challenge to develop effective plant/crop stress breeding strategies like Focused Identification of Germplasm Strategy (FIGS). This strategy would be definitely unique and specific to each crop and problem. Development of stable stress breeding stocks using classical (induced mutagenesis) to molecular/genomic tools would be a good start-up strategy in this direction. Advancement of current agronomic practices can also be augmented to specific stress breeding concept to get fair return of crop yield.

This special issue aims mainly to unveil major biochemical/physiological and molecular-genetic mechanisms underlying crop plant abiotic stress responses and tolerance and to extensively discuss breeding strategies and agronomic practices to achieve crop plant adaptation/tolerance to increasing multiple abiotic stressors.

Researchers are welcome to contribute to this topic with their high quality research and review papers.

Potential topics include, but are not limited to:

- ▶ Manifestations of drought, heat, salinity, chilling, heavy metal, metalloid, UV-radiation, flooding, and atmospheric pollution induced abiotic stresses in crops
- ▶ Photosynthesis, plant growth, and crop productivity under specific and multiple stress conditions
- ▶ Sugar metabolism, source-sink strength, and plant growth under stress
- ▶ Modulation of nitrogen and sulfur metabolism under stressful condition
- ▶ Hormonal regulation in crop productivity during stress
- ▶ Plant stress breeding strategies (mutagenesis, TILLING, breeding stocks, QTLs, and priming methods such as use of thiourea, selenium, and silicon) to maintain and enhance tolerance and productivity
- ▶ Molecular and functional genomics concepts towards tolerance and plant stress breeding
- ▶ Modulation of agronomic practices in relation to different stressors towards tolerance and yield
- ▶ Development of Focused Identification of Germplasm Strategy (FIGS) for stress tolerance and yield

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