

Editorial Notes: Biostimulation and Overcoming the Abiotic Stresses in Plants

Biostimulants raise a lot of interest through a very large number of published researches. Research using biostimulants from natural resources is rapidly escalating as a result of peer publications. It's well known that biostimulants are substances and microorganisms, which have been reported to regulate growth of plants in several ways. They have positive effects that could be used to promote the commercial cultivation of crops under normal or different stresses. They have been used by several researchers as soil amendment, seed soaking or foliar spray treatments to help plants to grow well under normal conditions. In addition, they enable plants to overcome different abiotic stresses and improve productivity of stressed-plants. Using these biostimulants, solutions to the problem of increasing environmental stresses can be found at present.

With regard to the growing interest in biostimulants researches, this special issue for "International Letters and Natural Sciences" was aimed to collect and document recent advances in the field of "Biostimulation and Overcoming the Abiotic Stresses in Plants".

We have received excellent responses from researchers working in the field of "Biostimulation and Overcoming the Abiotic Stresses in Plants" in reputable institutions in many countries such as Egypt, Nigeria, Pakistan, Turkey, and Ukraine.

This special issue consists of 13 full-length research articles, which demonstrate the effects of various natural resources of biostimulants and their mechanisms that enable different crop plants to overcome different environmental stresses. The special issue involves some articles aimed at overcoming the adverse effects of salinity stress using various biostimulants such as propolis aqueous extract on spinach plants [1], arbuscular mycorrhizal fungi on fluted pumpkin plants [2], and cyanobacteria on soybean [3] and sunflower plants [4]. The special issue also provides insights into mitigating the adverse effects of drought stress using various biostimulants such as Azoxystrobin fungicide on tomato plants [5], methylamine on pepper seedlings [6] and microbial fertilizer on guar seedlings [7], as well as the use of moringa leaf extract to mitigate the adverse effects of low temperature stress on moringa seedlings [8] and cytokinin nature Ivin to overcome the harmful effects of industrial and exhaust fumes on China Aster [9].

The research articles published in this special issue provides excellent information on the various mechanisms that biostimulants perform on the level of components of the antioxidant defense system, including low molecular weight antioxidants and antioxidant enzymes activities induced by various applied biostimulants.

This is the first successful special issue consisting of 13 research articles on the "Biostimulation and Overcoming the Abiotic Stresses in Plants", and we expect that this special issue will contribute immensely to the further understanding and developments in the field of the beneficial roles of biostimulants. We also hope that this special issue will inspire and stimulate researchers worldwide to submit their new findings in the upcoming special issues.

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References

- [1] M.A. Seif El-Yazal, Presoaking treatment of propolis aqueous extract alleviates salinity stress in spinach (*Spinacia oleracea* L.) plants grown under calcareous saline soil conditions, International Letters and Natural Sciences, Special Issue (2019).
- [2] O.G. Okon, G.D.O. Eneh, G.D. Uboh, P.P. Uyon, Enhancement of Salt Tolerance via *Glomus geosporum* Inoculation in *Telfairia occidentalis* Hook. F. Seedlings, International Letters and Natural Sciences, Special Issue (2019).
- [3] S.S. Zaki, E.E.E. Belal, M.M. Rady, Cyanobacteria and glutathione applications improve productivity, nutrient contents, and antioxidant systems of salt-stressed soybean plant, International Letters and Natural Sciences, Special Issue (2019).
- [4] A.A.A. Abdel-Hafeez, T.A. Abd El-Mageed, M.M. Rady, Impact of ascorbic acid foliar spray and seed treatment with cyanobacteria on growth and yield component of sunflower plants under saline soil conditions, International Letters and Natural Sciences, Special Issue (2019).
- [5] A.A.I. Ali, E.M. Desoky, M.M. Rady, Application of Azoxystrobin fungicide improves drought tolerance in tomato, *via* enhancing physio-biochemical and anatomical feature, International Letters and Natural Sciences, Special Issue (2019).
- [6] E. Yildirim, M. Ekinici, R. Kul, M. Turan, A. Gür, Mitigation of Drought Stress Effects on Pepper Seedlings by Exogenous Methylamine Application, International Letters and Natural Sciences, Special Issue (2019).
- [7] A. Kusvuran, S. Kusvuran, Using of microbial fertilizer as biostimulant alleviates damage from drought stress in Guar (*Cyamopsis tetragonoloba* (L.) Taub.) seedlings, International Letters and Natural Sciences, Special Issue (2019).
- [8] S. Batool, S. Khan, S.M.A Basra, M. Hussain, M.S. Saddiq, S. Iqbal, S. Irshad, S. Bashir, M.B. Hafeez, Impact of Natural and Synthetic Plant Stimulants on Moringa Seedlings Grown under Low-Temperature Conditions, International Letters and Natural Sciences, Special Issue (2019).
- [9] V. Bessonova, O. Ivanchenko, S. Volodarets, Effect of Treatment of *Callistephus chinensis* (L.) Ness. Plants by Ivin at Growth and Decorative Parameters in Conditions of Industrial City, International Letters and Natural Sciences, Special Issue (2019).

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