ALLEVIATION OF DROUGHT STRESS IN WHEAT BY DIFFERENT ORGANIC AMENDMENTS

Dr. Mirza Hasanuzzaman*

Executive Summary

Drought stress is one of the major threats of agricultural production. The primary effect of drought is the creation of oxidative stress that overproduces reactive oxygen species (ROS) that convey different physiological disorders of plant. A pot experiment with organic amendments was conveyed at the experimental net house of the Department of Agronomy, Sher-e Bangla Agricultural University, Dhaka from November, 2018 - February, 2019 to investigate the effect of drought stress on the growth, physiology and yield and the mollification capacity of drought in wheat using organic amendments. The objectives of the research work were (i) to observe drought-induced morphological and biochemical alteration in wheat; (ii) to observe the oxidative stress under drought stress environment and (iii) to reveal the physiological basis of organic amendments-induced drought stress tolerance. To get an idea about the effective organic amendments against drought stress in wheat. The experiment consisted of two factors *viz.*, water regimes (well-watered and drought) and organic amendments (compost @10 t ha^{-1}, vermicompost @ 10 t ha^{-1}, poultry manure (@10 t ha^{-1}, biochar @ 2.5% w/w soil and chitosan @ 1% w/w soil). Drought stress reduced germination by 7.48%, plant height by 15.02%, SPAD value by 15.91%, relative water content by 13.44%, spikelet $spike^{-1}$ by 16.92%, grains $spike^{-1}$ by 11.73%, and hundred grains weight by 17.83%. Drought also resulted in the generation of reactive oxygen species, and caused oxidative stress. Application of organic amendments acts as a protectant and reduces drought stress condition and in most cases, it enhanced above these growth, physiological, yield and yield attributes. Organic amendments prevent the production of reactive oxygen species and consequently prevents from oxidative stress. So, the present study concluded that organic amendments played significant role to alleviate drought and among these vermicompost performed better.

* Professor, Dept. of Agronomy, Sher-e-Bangla Agricultural University, Dhaka-1207