World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:12, No:09, 2018

Improvement in Drought Stress Tolerance in Wheat by Arbuscular Mycorrhizal Fungi

Authors : Seema Sangwan, Ekta Narwal, Kannepalli Annapurna

Abstract : The aim of this study was to determine the effect of arbuscular mycorrhizal fungi (AMF) inoculation on drought stress tolerance in 3 genotypes of wheat subjected to moderate water stress, i.e. HD 3043 (drought tolerant), HD 2987 (drought tolerant), and HD 2967 (drought sensitive). Various growth parameters were studied, e.g. total dry weight, total shoot and root length, root volume, root surface area, grain weight and number, leaf area, chlorophyll content in leaves, relative water content, number of spores and percent colonisation of roots by arbuscular mycorrhizal fungi. Total dry weight, root surface area and chlorophyll content were found to be significantly high in AMF inoculated plants as compared to the non-mycorrhizal ones and also higher in drought-tolerant varieties of wheat as compared to the sensitive variety HD 2967, in moderate water stress treatments. Leakage of electrolytes was lower in case of AMF inoculated stressed plants. Under continuous water stress, leaf water content and leaf area were significantly increased in AMF inoculated plants as compared to un-inoculated stressed plants. Overall, the increased colonisation of roots of wheat by AMF in inoculated plants weather drought tolerant or sensitive could have a beneficial effect in alleviating the harmful effects of water stress in wheat and delaying its senescence.

Keywords : Arbuscular mycorrhizal fungi, wheat, drought, stress
Conference Title : ICTWAME 2018 : International Conference on Technologies in Water, Agriculture Microbiology and Ecotoxicology
Conference Location : Rome, Italy
Conference Dates : September 17-18, 2018