



Amelioration of newly reclaimed soil under some stress conditions in Upper Egypt

A Thesis

Submitted in Partial Fulfillment The Requirements for the Degree of Doctor of Philosophy in Agricultural Sciences (Soil Sciences)

By

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2022

ABSTRACT

Experiments were carried out on a salt sandy loam soil at Southeast of Sohag Governorate, during four successive seasons of 2017/2018 and 2018/2019 under drip irrigation system. to examine the capability of four different varieties relatively salt-tolerance, wheat variety (Sids1) as a winter crop and sorghum variety (Giza113) as a summer crop, while, the relatively salt- sensitive varieties were wheat variety (Giza 168) as a winter crop and sorghum variety (Dorado) as a summer crop, in the studied soil under stress conditions. Application of different amelioration techniques were done by using with organic amendment,(mixture1 and mixture2) as well as, Bio-organic amendments (soil, foliar spray and soil + foliar spray). Results showed an increasing in fresh,dry weights and water content for both shoot and root, as well as increased plant length of shoot by adding the above treatments. Results also showed that different amelioration techniques with organic amendment under two varieties differed in respectively salt tolerance, at 80 and 60 days, as expected, associated with a marked improvement in the Na^+ content and Na^+ uptake status for both shoots and roots. Comparing the studied three methods of bioorganic amelioration (S, F and S + F) showed that application (S + F) method had a highly significant effect, with respect to varietal responses to salinity, where tolerance plants were associated with greater net transport of Na^+ from roots to shoots. It was also observed that application of organic amelioration techniques increased grain yield weight (ton fed^{-1}) straw and stover yield weight (ton fed^{-1}) and 1000 grain weight (gm), and improved physical and chemical properties of the studied soil bulk density, hydraulic conductivity, total porosity, pore size distribution, field capacity, wilting point and available water (EC), (pH), (OM), available N, available P, available K, as well as grains yield (ton fed^{-1}) straw yield (ton fed^{-1}) stover yield (ton fed^{-1}) (the weight of 1000 grain (g m) of both wheat and sorghum plants. particularly (mixture 2) was more effective than the other one, while, the treatments of soil + foliar application with bioorganic integrated with (mixture 2) as soil application from organic amendment were more effective as compared with control and other treatments, especially in the second season.

Key words: Amelioration, stress conditions, organic amendment, bioorganic, wheat, sorghum, salt- tolerance, salt- sensitive, newly reclaimed soil.

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