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Effect of Biofertilizers as a Partial Substitute for Mineral Fertilizers on Growth, Anatomical Structure, Mineral Elements and Yield of Wheat under Newly Reclaimed Soil Conditions.

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Abstract

Two field experiments were conducted at the Demo Farm, Faculty of Agriculture, Fayoum University during 2013/2014 and 2014/2015 seasons, to study the effect of biofertilizers application (Butassine N as foliar and Biogen as inoculation) and mineral fertilizers (NPK) at 50, 75 and 100% of the recommended dose on growth, yield, anatomical structure and physiological attributes of wheat plants. The results showed that application of biofertilizers in combination with mineral fertilizers (NPK) significantly increased plant height, number of tillers plant⁻¹, number of spikes plant⁻¹, number of spikelets spike⁻¹, spike length, fresh weight plant⁻¹ and dry weight plant⁻¹. This resulted in an increase in grain yield/fed. which reached 18.02 and 14.95% during two seasons, respectively by the combined treatment of Butassine N+75% NPK. All treatments greatly increased stem section diameter, leaf pigments, total carbohydrates, protein%, nutrient elements, relative water content (RWC%) and membrane stability index (MSI%) in leaves. However, both total soluble sugar (TSS) and proline declined. From these results it could be recommend using Butassine N in combination with 75% NPK to minimize chemical fertilizers dose under newly reclaimed soil conditions.

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