



## Effect of soil amendments on wheat (*Triticum aestivum* L.) yield and nutritional status in sandy calcareous saline soil

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**Abstract:** Two field trials were carried out in sandy calcareous saline soil (EC 6.3 dS m<sup>-1</sup> and Ca CO<sub>3</sub> 5.6 -19 %) during two successive winter seasons on a private farm at Belbais, Sharkia Governorate. The experiments aimed to investigate the effect of compost application at 0 and 24 m<sup>3</sup> ha<sup>-1</sup> when combined with N at (0, 108, 144 and 180 kg N ha<sup>-1</sup>) and K at (0, 57.6, 115.2 and 172.8 kg K<sub>2</sub>O ha<sup>-1</sup>) on wheat yield and nutrient content of leaves and grains. The results showed significant main effects due to compost application at 24 m<sup>3</sup> ha<sup>-1</sup> on wheat yield and yield components. Grain and straw yields were significantly increased as a result to compost application. Meanwhile, grain yield was significantly increased with the inorganic N fertilizer up to 180 kg N ha<sup>-1</sup>. Potassium applications significantly increased grain yields, and the increase due to K application was approximately 20% greater than control treatment. On contrast, no significance were detected for interactions between compost and K, suggesting that the effects of these mineral fertilizers on grain yield were additive. The chemical analysis of the vegetative plants revealed that there were some immediate benefits from addition of compost, where significant increases in N and Fe concentrations were detected. In addition, Mn and Cu concentrations were significantly increased due to the interaction between compost and N at 180 kg N ha<sup>-1</sup>. The chemical composition of wheat grains revealed some evidence of beneficial increases in N, K and the microelements (Fe, Mn, Zn and Cu) due to compost application, although only the increase in Mn was significant. In general, the data showed that following two applications of compost, wheat grain composition was comparable to the normal farm practice with inorganic fertilizer. It could be concluded from this study that application of compost at 24 m<sup>3</sup> ha<sup>-1</sup> combined with 144 kg N ha<sup>-1</sup> increased wheat yield. Meanwhile, K should be included to maximize wheat grain yield under such conditions. In general, application of compost may increase wheat yields and improve the nutritional status of the plants on such sandy calcareous saline soils.

**Key words:** wheat, compost, Nitrogen, Potassium, nutrient, yield.