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Optimizing Management Practices for Increasing the Efficiency of Using Seawater as Alternating Methods of Irrigation

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TWO POT experiments were conducted in the halophytic green house of the National Research Centre, Dokki, Giza to study the effect of foliar application with zinc (300 ppm Zn-EDTA), potassium (2.0% KNO_3) or ascorbic acid (200 ppm) on productivity, salt tolerance and some physiological aspects of *leptochloa fusca* plants grown under different levels of seawater irrigation (Tap water, 12.5, 25.0, 37.5 and 50.0%). Increasing salinity of water irrigation level generally increased the content of soluble carbohydrates, proline, sodium, calcium and the value of succulence and osmotic potential (OP) as well as salinity tolerance index (STI) particularly under 50.0% seawater concentration. On the other hand, raising the level of seawater used for irrigation adversely affected the content of potassium as well as K/Na and Ca/Na ratio. However, moderate concentration of seawater increased biomass production, crop growth rate (CGR) and the content of chlorophyll a+b and crude protein. Foliar application with either potassium, zinc or ascorbic acid positively affected all the growth and physiological criteria as well as salt tolerance of the tested plants compared with unsprayed plants (control). Foliar application with potassium surpasses the other foliar application treatments especially under high levels of saline irrigation.

Keywards: Seawater irrigation, *Leptochloa fusca*, Foliar fertilizers, Salt tolerance.

Throughout the developing world, there are extensive coastal deserts where seawater is the only water available. Although growing crops in sandy soil and salty water is not a benign prospect for most farmers, for saline agriculture they can complement each other. The disadvantages of sandy soil for conventional crops become advantages when saline water and salt tolerant plants are used.

Salt tolerant plants (halophytes) are highly evolved and specialized organisms with well-adapted morphological, phonological and physiological characteristics allowing them to proliferate in the high salinity conditions and offers a low-cost approach to reclaiming and rehabilitating saline habitats. This approach would lead to the domestication of wild, salt tolerant plants for use as forage crops (González *et al.*, 2005). Whereas, *Leptochloa fusca* is a highly salt tolerant C4 perennial halophytic forage plants grown well in coastal salt marsh. It has a special place in newly emerging farming systems, especially in coastal