

**WATER REQUIREMENTS OF ROSELLE (*Hibiscus sabdariffa* L.) PLANTS UNDER DIFFERENT RATES OF ORGANIC MANURES AND YEAST AS RELATION TO LEAF ANATOMICAL STRUCTURE**

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**ABSTRACT:** Three field experiments were carried out during three successive summer seasons of 2006, 2007 and 2008 at the Experimental Farm, El-Kassasein Research Station, Ismailia governorate, to investigate the ameliorative effect of poultry manures at rates (10, 20, 40 or 60m<sup>3</sup>/fed.) and different concentrations of active yeast extract (2, 4, 6 or 8 g/L.) on roselle plants (*Hibiscus sabdariffa* L.) cultivated in new reclaimed soil under limited water supply, the plants received 560, 1120, 1680 or 2240 m<sup>3</sup> water/fed./season. The results indicated that, fresh weight of fruits yield per fed. increased with increasing water supply, poultry manures and active dry yeast. On the other side proline, total soluble sugar contents and osmotic pressure of roselle plant leaves significantly increased with decreasing amount of water supply, while application of poultry manures and active dry yeast significantly decreased them. The interaction between poultry manures and active dry yeast had ameliorative effect against shortage of water supply by decreasing proline and total soluble sugars content and osmotic pressure of roselle plant leaves. This decreasing was clear with applied poultry manures of 40 m<sup>3</sup>/fed. and active dry yeast at 8 g/L. In addition, increasing the anatomical characters recorded (midvien thickness and width, midvien vascular bundle thickness and width,

**blade thickness, palisade and spongy tissue thickness, average xylem vessel diameter and No. of xylem rows in midvien vascular bundle) due to the high levels of yeast and poultry manures.**

**Key words: Poultry manures, active dry yeast, water relations, anatomy, Roselle plants. (*Hibiscus sabdariffa* L.)**