

**USING MORINGA LEAF EXTRACT AS BIOSTIMULANT AND
GIBBERELIC ACID FOR ENHANCING FENNEL (*Foeniculum vulgare* var.
azoricum Mill.) GROWTH AND OIL YIELD**

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ABSTRACT

The field work was carried out at the experimental farm "Demo" in faculty of Agriculture, Fayoum university, during two successive seasons of 2013/2014 and 2014/2015. The present study aimed to investigate the effect of Gibberellic acid (GA₃) and Moringa leaf aqueous extract (ML_e) as individual and interaction on the growth, seed (fruit) yield, oil production and its main components and chemical constituents of Fennel plants. The results showed that spraying fennel plants at 150ppm (GA₃) plus 20% of (ML_e) gave the highest vegetative growth attributes; plant height, branches number plant⁻¹ and fresh and dry weight plant⁻¹. Using 50 ppm of GA₃ along with 10% of ML_e concentration recorded the highest fruit yield plant⁻¹, fruit yield feddan⁻¹, oil yield plant⁻¹ and feddan⁻¹, also the highest percentages of oil constituents; α-Pinene, Limonene, Eucalyptol, Fenchone and trans-Anethole but it gave the lowest content of Estragole, (which is undesirable component), compared to other treatments. While, the foliar application of 50ppm with 30% of ML_e concentration has resulted in the highest values in terms of number of umbels plant⁻¹ and root length. The highest content of chlorophyll (a), (b) and carotenoids has been given from the interaction between 150ppm (GA₃) with 30% of (ML_e) concentrations. The highest contents of total carbohydrates percentage and the greatest essential oil percentage plant⁻¹ were obtained from the moderate concentration of GA₃, (100ppm) combined with 20% of ML_e.

Hence, it can be recommended that for obtaining higher fruit yield plant⁻¹ and feddan⁻¹ and oil yield plant⁻¹ and feddan⁻¹, Fennel plants should be sprayed with 50ppm of GA₃ plus 10% of ML_e concentration.

Keywords: Fennel, *Foeniculum vulgare*, *azoricum*, *Moringa oleifera* extract, Gibberellic acid and essential oil.