IRRIGATION IMPACTS USING DIFFERENT CHEESE WHEY TYPES ON GROWTH, CHEMICAL CONSTITUENTS AND HISTOLOGICAL STRUCTURE OF *Schinus molle* L. SEEDLINGS

By

SAHAR THABET ABD EL-HAFEEZ EWIS
B.Sc. Agric. Sci. (Plant Production), Fac. Agric., Cairo Univ., 2012

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APPROVAL SHEET

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Title of Thesis: Irrigation impacts using different cheese whey types on growth, chemical constituents and histological structure of *Schinus molle* L. seedlings.

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ABSTRACT

The dairy industry is one of the main sources of industrial effluent; this industry is based on the processing and manufacturing of raw milk into deferent products such as cheese. Cheese whey is simultaneously an effluent with nutritional value and a strong organic content. The present study was conducted to determine the effect of irrigation using various types of cheese whey (CW) and potable water (PW) on *Schinus molle* L. seedlings to evaluate its growth, chemical constituents and histological structure. The study was carried out at the experimental nursery of the Ornamental Horticulture Department, Faculty of Agriculture, Cairo University, during seasons of 2014/2015 and 2015/2016. The experimental design was a randomized complete block design using nine treatments as follow (CW: PW) : PW (control) (0:1), Kareish cheese whey (KCW) (1:0) and (1:1), Mozzarella cheese non salty whey (MCNSW) (1:0) and (1:1), Mozzarella cheese salty whey (MCSW) (1:6) and (1:8), and Domiati cheese whey (DCW) (1:12) and (1:16). Growth characters (aerial parts and root characters) were measured, chemical constituents (pigments content, total carbohydrates, proline, N, P, K, Ca, Na, Mg, and Cl) were determined, and histological structure (lamina and midrib thickness, midrib main vascular bundles length and width, and oil glands number and diameter) was also conducted. The results indicated that irrigating plants with DCW at (1:12) and (1:16) and MCSW at (1:6) and (1:8) recorded the highest significant growth, chemical constituents and histological structure than those irrigated with MCNSW and KCW as compared to the control in both seasons. The data showed that usage of different CW types proved to be an economic way to solve water scarcely problems.

Key words: Cheese whey reuse, Water scarcely, Dairy industry, Industrial effluent, Brazilian pepper tree.

DEDICATION

I would like to dedicate this work to the spirit of my ***father; Mr. Thabet Abd El-Hafeez*** *for his inspiration in all sides of my life, my mother* ***Mrs. Thabet Abd El-Hafeez*** *for everything she provided me; love, patient and difficulties I faced in my life. Special dedicate to my big brother* ***Ahmed Thabet Abd El-Hafeez****; my young father and my life supporter and my sisters;* ***Asmaa, Hanan, and Jusmine Thabet Abd El-Hafeez*** *for their help and their love. Also I would like to dedicate this work to* ***my grandmother*** *my first mother for her support and her deep love and warmth she provided me. Finally I would like to dedicate this work to everyone in* ***my big family*** *for their support.*

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