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Master Thesis Defense

Entitled

YIELD, NUTRIENT CONTENTS AND ANTIOXIDANT LEVELS IN BASIL (*Ocimum basilicum* L.) GROWN IN
AQUAPONIC AND SOIL SYSTEMS

by

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Date & Venue

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Time 11 – 1pm

Abstract

A study was conducted to evaluate the performance of *Ocimum* in both aquaponic and soil systems in the UAE climatic condition. The experiments were conducted under greenhouse condition. Plants were raised in aquaponic beds with ornamental fishes in different concentrations. Same time, a set of plants were raised in pots under greenhouse set up. The studied parameters were under morphological (total weight and leaf number, shoot and root length, number of branches), biochemical (chlorophyll a, chlorophyll b, total chlorophyll, anthocyanin, xanthophyll, protein and phenol contents) and antioxidant levels (Ascorbic acid and tocopherol). For analyzing the stress effects of aquaponic system on plant defense mechanism, two different antioxidant enzymes (catalase and peroxidase) were analyzed. Also, nutritional contents were determined at the end of the study period. Water quality parameters were monitored during the entire study period. Based on the results, the total weight and leaf numbers showed a significant increase under aquaponic setup when compared to normal greenhouse grown plants. There was significant increase in growth parameters in aquaponic system when compared to conventional greenhouse cultivation of basil plants. The photosynthetic parameters showed a decline in aquaponics but the biochemical parameters showed an enhancement in the aquaponic system of growing basil plants. The antioxidants showed a significant increase in aquaponic system which suggests the water stress effect on plants induced by the aquaponic growing system. The nutrient level showed significant enhancement in aquaponic system. From the results of this study, it can be concluded that, the aquaponic system is best suitable method of *Ocimum* production in UAE condition.

Keywords: *Ocimum*, ornamental fish, aquaponics, nutrients, antioxidants, sustainable production