



جامعة الإمارات العربية المتحدة
United Arab Emirates University

**The College of Graduate Studies and the College of Food and Agriculture
Cordially Invite You to a**

Master Thesis Defense

Entitled

*DETERMINATION OF THE IDEAL PLANT DENSITY OF TOMATO SOLANUM LYCOPERSICUM
UNDER AN AQUAPONIC PRODUCTION SYSTEM WITH TILAPIA OREOCHROMIS AUREUS
UNDER UAE CONDITIONS*

by

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Abstract

Aquaponics system solves a lot of agriculture problems, particularly water and fertilization problems, thus offer a way of growing plants without fearing soil pest infestation or pesticide toxins and largely economic use of water. This system ensures produce, free of hazardous chemicals, leading to healthy food for maintaining human health. This system also ensures sustainability by creating a natural relationship between fish and plants and makes gardening more productive and economical. Aquaponics system is a dynamic ecosystem that can be integrated to achieve food security through the production of fish and vegetables without the intervention of fertilizers. The focus of this study is optimizing planting density of tomato in aquaponic system, with the support of fish under economic consumption of water and electricity which are the two major inputs in this system. The experiment implemented under greenhouse condition at the College of Food and Agriculture at Falaj Hazza Campus Al Ain, UAE. three densities of tomato plant (2, 3 and 4 plants in foam) and three densities of tilapia (100, 120 and 140 kg/m³). The evaluation of the production system was based on the flowering behavior, tomato production and fish growth rate. Tomato fruit samples were analyzed for the chemical quality which includes dry matter, moisture, crude protein, fat, Crude fiber, ash%, macro and micro nutrients levels. The investigation also focusses on optimum fish stocking density and total yield of tomato in the aquaponics system. Under the same conditions of this experiment to improve the density of fish and obtain a higher density of tomato plant in the system of aquaponics can be achieved when the use of two plants in the dishes under the highest thickness of 140 kg / m³.

Keywords: Tomato, density, growth, fish stocking density, aquaponics, water, chemical analysis, elements.