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**Master Thesis Defense**

Entitled

*EVALUATING THE VARIOUS DENSITIES OF LETTUCE (*Lactuca sativa* L) IN AQUAPONICS  
SYSTEM WITH DIFFERENT FEEDING REGIME ON TILAPIA FISH (*Oreochromis Niloticus* L).*

by

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Abstract

Aquaponics is a unique system that can recycle the waste and produce more food per unit space integrating fish and crop plants. Aquaponics uses waste generated by fish as plant nutrients within a re-circulating system that returns clean water back to the fish. The purpose of this study was to cultivate high quality of lettuce (*Lactuca sativa* L.) and Tilapia (*Oreochromis niloticus* L.) production in an integrated aquaponic system with recirculating aquaculture system in the UAE climatic condition on three different densities and different feeding regimes. An experiment was conducted under greenhouse condition in *Falag Hazaa* aquaponics unit in Alain city in 2016 (from April to August). The evaluation of production was based on three parameters viz., head of lettuce production, total weight and leaf number under three different densities of lettuce (12, 18 and 28 in foam) and three different feeding regimes (1, 2 and 3 per day). Based on the results, the total weight and head weight showed a significant increase. The finding of leaf number proved that different densities do not impact the number of leaves. Control densities (18 plants) showed the best results, compared to other densities. However, the feeding frequency regime (3 times a day) had no significant effect on plant production. The results also showed both Ca and Na had no significant differences under different plant densities. The outcomes of Fe and Mo elements showed no significant differences among all treatment densities although, feeding regime has been changed among them. The level of pH showed a marginal decrease during the period of experiment. The current aquaponic system has been established for the lettuce/tilapia fish integration and concluded that the low feeding frequency (one time a day) is optimum for the aquaponics system in the UAE climatic conditions for better productivity. However, future studies on other crop and /or fish system combinations in aquaponics to determine how crop yields are affected by operating at specific pH levels of water for long term sustainability of production.

**Keywords:** Lettuce, density, growth, different feeding regime, aquaponics.