

Comparison of The Production of Bibb Lettuce Reared In Indoor Aquaponics System using Large Mouth Bass (*Micropterus salmoides*) Vs. Nile Tilapia (*Oreochromis niloticus*)

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Aquaponics is a sustainable food production system that combines hydroponic plant growth with fish rearing in a recirculating aquaculture system. Nile tilapia (*Oreochromis niloticus*) are predominantly raised in aquaponics due to their fast growth rates and ability to tolerate a variety of water conditions. As aquaponics becomes more popular in temperate climate zones, farmers are looking for alternative fish species that are more compatible with cooler temperatures and have a higher market value than tilapia. Authors will determine if plant growth factors as well as, the availability of nutrients in aquaponic systems are affected by the difference in nutrient requirements among fish species,

This study evaluated plant growth factors between aquaponic systems stocked with Nile tilapia and largemouth bass (LMB) (*Micropterus salmoides*). Six replicate systems were used that included a 415-L fish tank, a 190-L settling tank, a 115-L clarifier, and two 1.5 m² floating raft beds with a 72 plant capacity. Bibb lettuce (*Lactuca sativa*) and Red Russian kale (*Brassica napus*) were evaluated in successive planting cycles. Fish were stocked at approximately 1,400g per system and fed five percent body weight per day. Tilapia and LMB were fed a floating feed containing 32% and 45% protein, respectively. At harvest, total plant biomass in each system was recorded. Sixteen representative samples from each system were also collected and analyzed for plant and root weight, number of leaves, leaf surface area, root/shoot ratio, and chlorophyll content. Representative samples from each system were also dried and analyzed for micro and macro nutrient content.

Upon conclusion of this study, researchers will determine if differences exist in plant growth factors between tanks stocked with tilapia and LMB. This information will determine if producers are able to maximize their production and potential profits in aquaponics using LMB.