CFAES

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

GRADUATE EXIT SEMINAR

SHIB NATH PATTADAR

Moving toward sustainable food production: Aquaponics for healthy and nutritionally enriched fish and vegetables production

Aquaponics, which is an integration of aquaculture and hydroponic systems, is designed to provide fish and crop production benefits while reducing problems associated with water usage and waste discharge. It is expected to become a state-of-the-art technology to meet the rapidly growing global food demand sustainably, advancing multiple Sustainable Development Goals set by the United Nations. Over the past decades, aquaponic systems research was focused on a) the design or management of aquaponic operation and b) the optimization of plant-fish ratio or mass nutrient balance in recirculating aquaculture systems. However, fish and vegetable produced in aquaponics were not studied in the context of their yield and quality, for establishing a clear production and nutrients quality standards considering the potential of commercial expansion. The objectives are: 1) to compare the yield and nutritional quality of lettuce produced in aquaponics system with tilapia fish versus conventional hydroponics with respect to its biomass, macro- and micronutrients, 2) to measure the nutritional quality of fish produced in aquaponics system, as compared to the conventional aquaculture fish available in supermarkets, and 3) to determine the performance of yellow perch fish in aquaponics system for producing lettuce in the context of biomass compared to hydroponics system. Results show that overall lettuce shoot biomass produced under aquaponics system outperformed the hydroponics system. Aquaponic lettuce showed higher levels of Ca and Mg, but lower level of Fe contents. Tilapia fish produced in aquaponic system was comparatively nutritious and healthier than conventional tilapia fish. Lastly, the performance of yellow perch fish demonstrated that it is a potential fish species for operating an aquaponic system.

Advisor: Dr. Brian Slater

WEDNESDAY, JULY 6, 2022
1:00 P.M.

Join the seminar via Zoom:
https://osu.zoom.us/j/7695791179?pwd=OGhCemxUWW1aZTc2UTVzTU9NbWh4Zz09
Meeting ID: 769 579 1179 Password: 570478