NOTICE OF PUBLICATION

AQUACULTURE & FISHERIES INNOVATION LAB

RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Effect of Iron Amino Acid Chelate Supplemented Fish Feeds on Nutrients Composition of Spinach (*Spinacia oleracea*) in an Aquaponic System in Kenya

Author(s): Kenneth Rono, Julius O. Manyala, David Lusega[c]

University of Eldoret, Kenya, P. O. Box 1125, Eldoret, Kenya

Date: **7 March 2018** Publication Number: AquaFish Research Report **18-390**

Abstract: Aquaponics is an environmentally friendly production system involving reuse of waste and nutrients in production of fish and vegetables. Currently aquaponic system is the only solution for fish and plants production but one unique challenge is the maintaining of micro and macro-nutrient and the pH balance in the system. The study was conducted at the University of Eldoret for 119 days. A complete randomized design was used. The supplementation rates in fish diets constituted 30g, 20g, 10g and 0g Fe kg^{-1} respectively. Nile tilapia fry with a mean weight of 0.475 ± 0.025g and nine spinach (height 3 ± 0.131cm, 2 leaves) were stocked in 12 aquaria in an aquaponic system. 30g Fe kg^{-1} treatment exhibited higher minerals content than other treatments with Phosphorus 67.51 ± 2.42 mgL^{-1}, Zinc 9.06 8± 0.45 mgL^{-1}, Iron 5.2 ± 0.218 mgL^{-1}, Manganese 7.655 ± 0.344 mgL^{-1}, Total Nitrogen 11.248 ± 0.141mgL^{-1} and Sodium 7.218 ± 0.028 mgL^{-1}. There was improved water quality at 30g Fe kg^{-1} compared to other treatments. These results revealed that 30g Fe kg^{-1} iron amino acid chelate supplementation had better nutritional attributes as feedstuff for spinach growth than the three other dietary treatments. The study recommends the incorporation of 30g Fe kg^{-1} iron amino acid chelate in on-farm formulated diets for aquaponic system where complete diets are not easily accessible for small scale farmers.

This abstract was excerpted from the original paper, which was in *International Journal of Sciences: Basic and Applied Research (2018)* 37(2): 162-172

AQUAFISH RESEARCH REPORTS are published as occasional papers by the Management Entity, AquaFish Innovation Lab, Oregon State University, Corvallis, Oregon 97331-1643 USA. The AquaFish Innovation Lab is supported by the US Agency for International Development under Grant No. EPP-A-00-06-00012-00. See the website at <aquafishcrsp.oregonstate.edu>.