World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:17, No:03, 2023

Microsatellite-Based Genetic Variations and Relationships among Some Farmed Nile Tilapia Populations in Ghana: Implications for Nile Tilapia Culture

Authors : Acheampong Addo, Emmanuel Odartei Armah, Seth Koranteng Agyakwah, Ruby Asmah, Emmanuel Tetteh-Doku Mensah, Rhoda Lims Diyie, Sena Amewu, Catherine Ragasa, Edward Kofi Abban, Mike Yaw Osei-Atweneboana

Abstract : The study investigated genetic variation and relationships among populations of Nile tilapia cultured in small-scale fish farms in selected regions of Ghana. A total of 700 samples were collected. All samples were screened with five microsatellite markers and results were analyzed using (Genetic Analysis in Excel), (Molecular and Evolutionary Genetic Analysis software, and Genpop on the web for Heterozygosity and Shannon diversity, (Analysis of Molecular Variance), and (Principal Coordinate Analysis). Fish from the 16 populations (made up of 14 farms and 2 selectively bred populations) clustered into three groups: 7 populations clustered with the GIFT-derived strain, 4 populations clustered with the Akosombo strain, and three populations were in a separate cluster. The clustering pattern indicated groups of different strains of Nile tilapia cultured. Mantel correlation test also showed low genetic variations among the 16 populations hence the need to boost seed quality in order to accelerate aquaculture production in Ghana.

Keywords : microsatellites, small- scale, Nile tilapia, akosombo strain, GIFT strain
Conference Title : ICSAF 2023 : International Conference on Sustainable Aquaculture and Fisheries
Conference Location : Sydney, Australia
Conference Dates : March 27-28, 2023