

Thapanapun Surajit 2009: Comparison Study on Breeding Systems of Nile Tilapia (*Oreochromis niloticus*, Linn) in Ponds, Tanks and Hapas Suspended in an Earthen Pond for Commercial Tilapia Fry Production. Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Assistant Professor Ruangvit Yoonpundh, D.Tech.Sc. 137 pages.

Breeding systems of Nile Tilapia (*Oreochromis niloticus*, Linn.) in ponds, tanks and hapas suspended in an earthen pond were compared in terms of spawning efficiency, egg productivity, stress and survival rate of depleted yolk-sac fry for commercially tilapia fry production. Broodfish were stocked at the same density of 3 pairs/m² for all breeding systems and eggs were harvested at weekly intervals for 8-week period. Results were found that female broodfish of breeding system in hapas suspended in an earthen pond had statistically significant higher percentage of spawning/week and egg productivity than those of breeding systems in ponds and tanks ($P < 0.05$) where were 13.38±3.32% and 51.66±15.65 eggs m⁻² day⁻¹. Survival rates of depleted yolk-sac fry at all egg developmental stages were found non-significant differences ($P > 0.05$) among the three breeding systems.

Female broodfish were found significant differences in cortisol ($P < 0.05$) at the 2nd, 5th, and 8th week of breeding period respectively which breeding system in hapas suspended in an earthen pond had the highest average cortisol of 949.05±397.06 ng/dl at the 2nd week and were 742.83±321.61 and 435.95±106.16 ng/dl at the 5th and 8th of breeding system in ponds. Significant differences in 17β-estradiol of female broodfish ($P < 0.05$) were also found at the 5th and 8th week which the highest were 3,457.75±1,071.66 pg/ml and 2,464.67±1,262.52 pg/ml of breeding systems in tanks and in ponds at the 5th and 8th week respectively. In male broodfish, cortisol showed significantly different ($P < 0.05$) at the 2nd and 5th week which had the highest average cortisol of 1,272.61±409.78 ng/dl and 369.37±152.37 ng/dl of breeding systems in hapas suspended in an earthen pond and in ponds respectively. While testosterone of male broodfish of breeding system in ponds had significant ($P < 0.05$) higher than those of male broodfish of breeding systems in tanks and in hapas suspended in an earthen pond throughout the experiment. However, sperm quality evaluated by live cell staining found non-significantly different ($P > 0.05$) among the three breeding systems.

Student's signature

Thesis Advisor's signature