

## Supplementary Figures

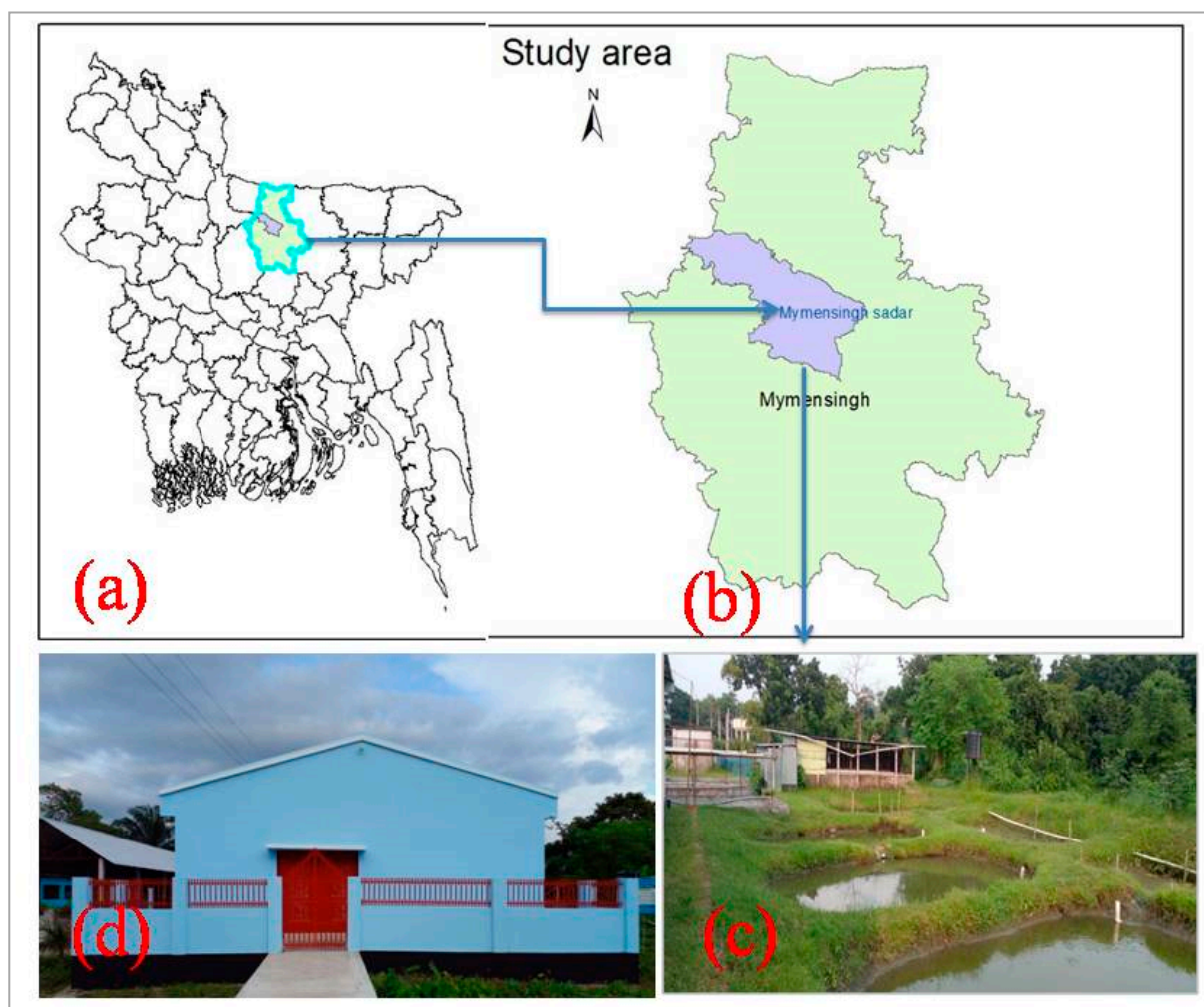


Figure S1. Study area; (a) study area into the country map; (b) study area into the district map, (c) broodfish pond, (d) Laboratory of Climate Research for Fishes

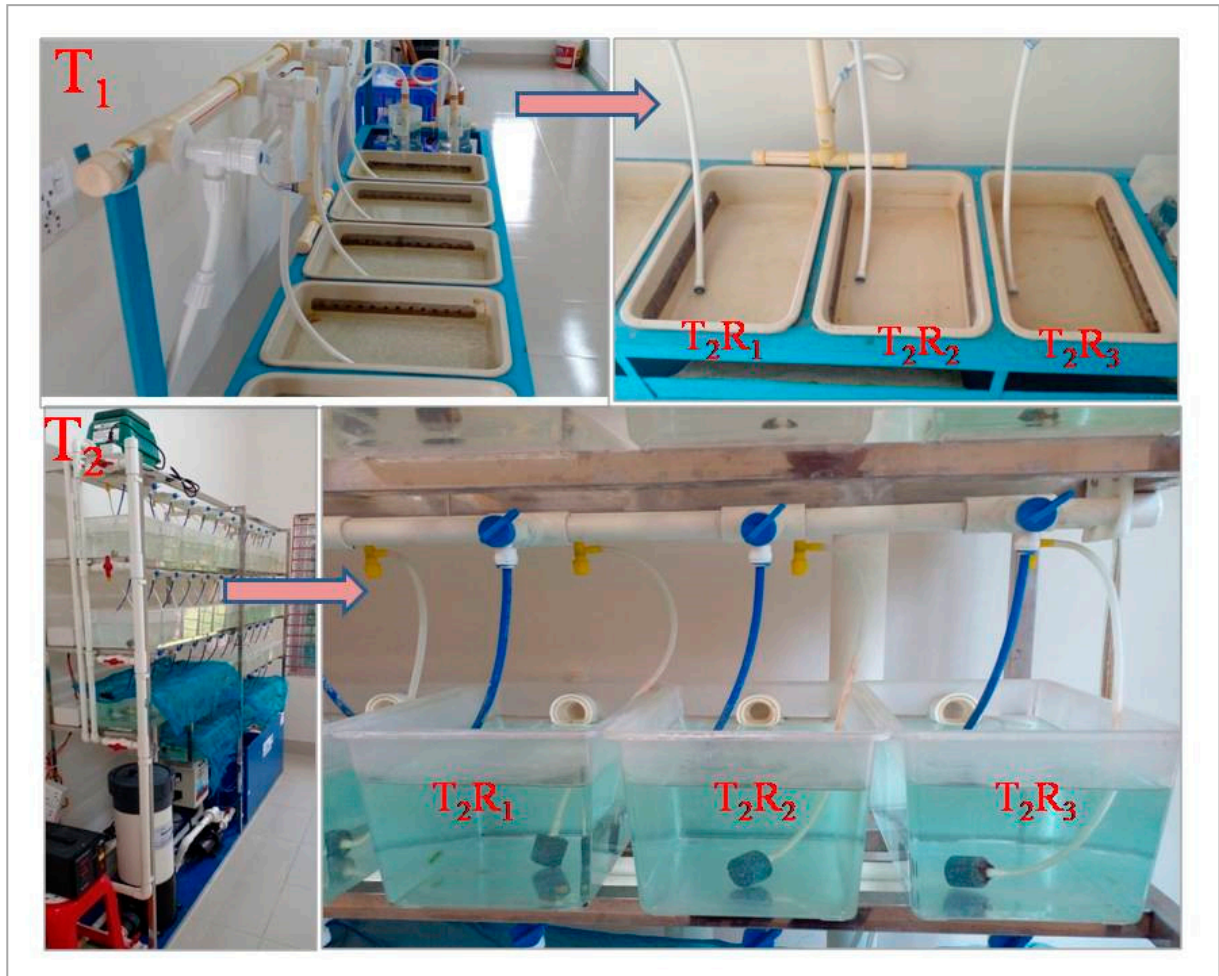


Figure S2. Experimental set up in the Laboratory of Climate Research for Fishes where (T<sub>1</sub>) traditional mini type hatchery with three replications, (T<sub>2</sub>) re-circulatory thermostatic system with three replications.

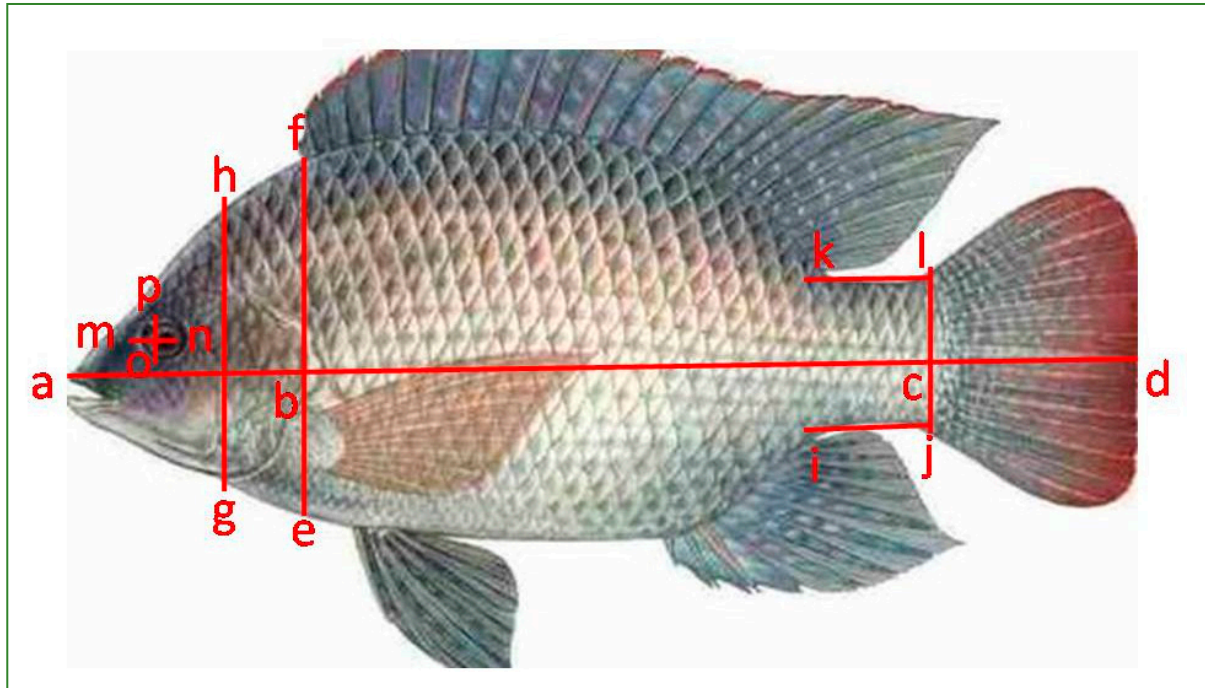


Figure S3. Morphometric characters of tilapia in traditional system; total length(ad), standard length(ac), body weight, body wide(ef), head length(ag), head wide(gh), caudal fin length(cd), caudal fin wide(jl), dorsal fin back to caudal top(kl), anal fin to caudal bottom(ij) and eye area.

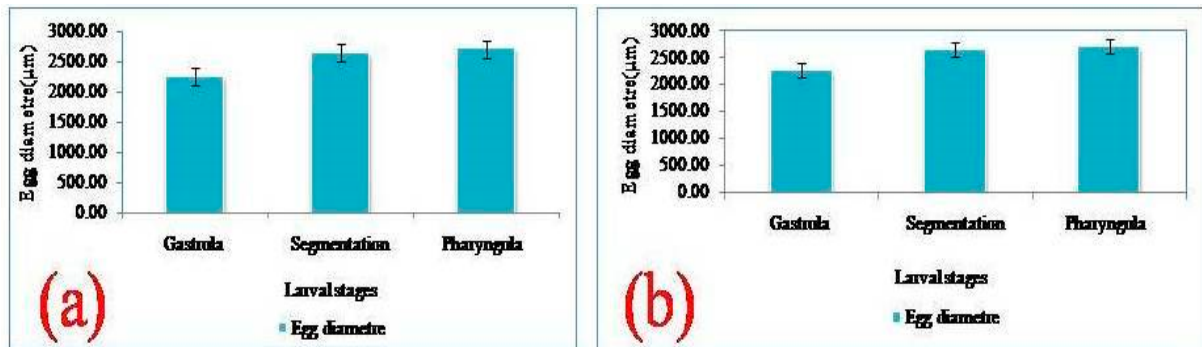


Figure S4. Egg diameter during embryonic development under the traditional and control systems; a) the trend of egg diameter increase in traditional hatchery system (T<sub>1</sub>), b) the trend of egg diameter increase in re-circulatory themostatic system (T<sub>2</sub>).

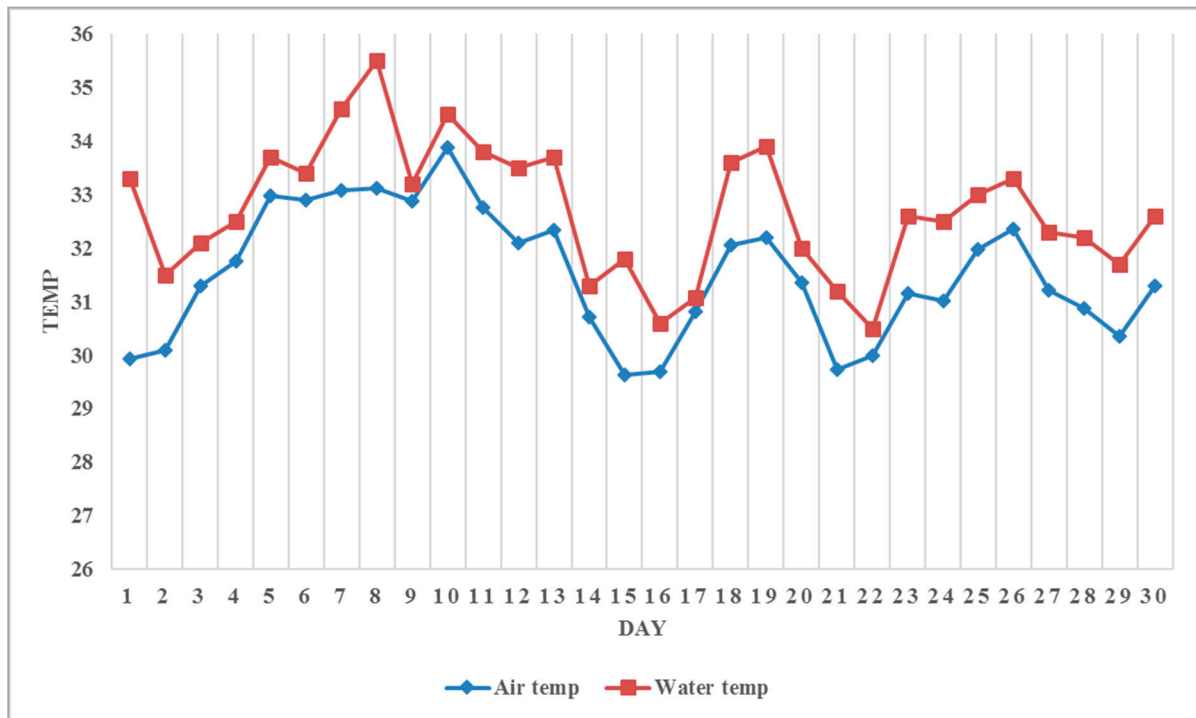


Figure S5. Air and water temperature variation during larval study period in traditional system( $T_1$ ) from 1DAH to 30 DAH; three highest temperatures 35.5 °C, 34.6 °C & 34.5 °C recorded in 8 DAH, 7DAH and 10DAH, respectively while three lowest temperatures 30.5 °C, 30.6 °C and 31.7 °C recorded in 22DAH, 16DAH and 17DAH, respectively.