

Aeration of Fish Pond Aquaculture Using Wind Power

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Abstract : This study discusses the possibility techniques of using wind energy to operate the aeration devices which are used in the intensive fish farm for Nile Tilapia. The main objective is to show at what expense this renewable energy source can increase the production. The study was done for the oxygen consumption by 1 kg fishes of tilapia put in 1 m³. The theoretical study shows that the fishes consume around 0.5 gO₂/hour when using paddle wheels with average oxygen transfer rate 2.6 kgO₂/kW.h comparing this with dissolved oxygen consumed by fishes it was found that 1 kW will aerate 5200 m³ and the same power will aerate 1800 m³ when using air diffuser system with average oxygen transfer rate 0.9 kgO₂/kW.h, this power can be supplied by the wind turbine with dimension with a tower 6 m high and diameter 2.7 m.

Keywords : aeration, fish pond, wind, power

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