

Assessment of nutrients in seaweed tank from land based integrated multitrophic aquaculture module

ABSTRACT

Aquaculture industry is often generating waste that negatively impact to the environment. These wastes are rich in nutrients. Seaweed can utilize these waste nutrients. This experiment was conducted in a flow-through system (FTS) and a recirculation system (RS) in land-based integrated multi-trophic aquaculture module using seaweed *Kappaphycus alvarezii* as one of the components. The aim was to assess the efficiency of the removal of nutrients in the integrated culture. *Kappaphycus alvarezii* was stocked at the density of 1 kg/tank in the rectangular plastic tank with 500 L of seawater. The waste generated from integrated multi-trophic aquaculture tanks was directed towards *K. alvarezii* culture tank. Water samples from inlet, outlet and inside of the culture tanks were drawn to determine the nutrients, namely, total nitrogen (mg/L) and total phosphorus (mg/L). Total nitrogen and total phosphorus in the seaweed sample and from the sediment of culture tanks were also analyzed. The total nitrogen amounting to 59.5% and 61.6% nitrogen was taken up by *K. alvarezii* in FTS and RS culture tank, respectively. The phosphorus showed the highest deposition of 61.1% and 31.6% in the sediment of in FTS and RS culture tanks respectively, whereas only 5.5% and 3.4% of phosphorus were taken up by *K. alvarezii* from FTS and RS culture tanks, respectively. The percentage of nitrogen remained in water was comparatively higher by 14.2% and 27.5% than phosphorus by 8.3% and 23.0% in water of both FTS and RS culture tanks, respectively. These results indicated that this species seaweed is efficient in the removal of nitrogen from both FTS and RS culture tank.