ABSTRACT

KRISMONO. Grazing rate of grass carp (Ctenopharyngodon idella) and growth rate of waterhyacinth (Eichhornia crassipes) as a basic for waterhyacinth controlling in Limboto Lake, Gorontalo. Under direction of M. F RAHARDJO, ENANG HARRIS, and ENDI S. KARTAMIHARDJA

Limboto is a swampy lake type which located in Gorontalo, covering about 2,900 ha, with 1-5 m depth (an average 2 m). In 1994, 35% of the lake surface had been covered by water hyacinth as aquatic weed and increased to 60% in 2006. This condition affected aquatic ecosystem quality such as decreased water productivity, reduce the fish production, and increasing lake sedimentation. Grass carp (Ctenopharyngodon idella) has been known as biological control agent for water hyacinth (Eichhornia crassipes). The first objective of this research is to describe the relationship between grass carp stocking density and the grazing rate of water hyacinth plant by grass carp; and then their impact to the water quality. Research was conducted in the laboratory of Faculty of Mathematics and Life Sciences, Gorontalo State University in November to December 2009. The Complete Block Design was created using four treatments and three replications. The treatments comprised of fish stocking density by 2, 4, 8 and 16 individuals respectively (the fish size is 9 grams individual\(^{-1}\)). 200 grams of water hyacinth were used as food of fish on the plastic bags with 50 litres size aquarium. The results showed that 4 fish stocking density was the best treatment with the rates fish growth length is 0.072 mm day\(^{-1}\) and 10 % weight day\(^{-1}\), 24.4 Food Conversion Ratio and 24 % weight day\(^{-1}\) Food Consumption. Fish grazing is highest (1.39 gram day\(^{-1}\)) and significantly difference with the other treatments based on the analysis of variance on 95% accuracy. Water quality and plankton abundance was change during observation, but will be recovering to normal in the end of the research. The second objective of this research is to describe the grazing rate effect of grass carp to water hyacinth growth in the Limboto Lake. Cage culture media were used in the Random Completed Design experiment with 10 kg of water hyacinth planted in every media. Three stocking density treatments with three replications (100, 200, and 400 individual grass carp) and one control without grass carp treatment were applied to the experiment. The results showed that stocking density with 200 individual of grass carp was most effective for controlling water hyacinth growth, with 2.9 weight day\(^{-1}\), 110.72 Food Conversion Ratio, 321% weight day\(^{-1}\) Food Consumption, 15% mortality, decreasing 40 % of water hyacinth coverage area or equal to 13.9 m\(^2\), and increasing the phytoplankton productivity 6.8 mg C m\(^{-3}\)day\(^{-1}\) at the end of the experiment (after 2 month).

Keywords: grass carp, control, waterhyacinth, Limboto Lake