

EFFECT OF DENSITY RATIO ON PERFORMANCE OF NILE TILAPIA AND CATFISH IN POLYCULTURE FISH FARMING SYSTEM

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Abstract

This study aims to determine the optimal stocking density ratio in the polyculture system of catfish and nile tilapia fish. This study is conducted experimentally using the Completely Randomized Design with the differences in the treatment of stocking density ratio, each repeated five times. The treatments of the stocking density ratio of both the catfish and the nile tilapia include: A (75 :75 fry/m²), B (100:50 fry/m² and C (125:25 fry/m²). The observed parameters are growth rate, survival rate and Food Conversion Ratio. The result of this study shows that the stocking density ratio significantly affects the growth rate and survival rate of the catfish and nile tilapia fry, while the feed conversion does not seem to affect them as much. The stocking density ratio that indicates the highest chance of growth rate and survival rate is 75 fry/m² for the catfish fry and 75 fry/m² for the nile tilapia fry.

Key words: Catfish fry, nile tilapia fry, growth rate, stocking density ratio

INTRODUCTION

The availability of land and water for aquaculture becomes more limited due to population growth. Besides the activities of the population that bring about pollutions, the activity of aquaculture itself produces wastes, particularly feed remains, faeces, and the result of fish metabolism rich in ammonia that is toxic for cultivated organisms [3]. Technological innovation is necessary in order to anticipate the decrease in aquaculture production caused by the reduction of lands for cultivation and decrease of water quality. An innovation that may be applied for this case is the polyculture system. The polyculture system commonly combines two species of fish with different feeding characteristics according to the feeding operation areas, one on the surface and the other at the bottom of the pond.

To identify how far the polyculture system can support the fish performance, a research has to be conducted through polyculture of catfish fry and tilapia fry in

certain ratios. This study aims to determine the best stocking density ratio in the polyculture farming of catfish and nile tilapia.

MATERIALS AND METHODS

1. Materials

The materials used in this research are: a) 2,100 Sangkuriang catfish fry aged 54 days with the average weight of 3.07 grams, b) 1,050 nile tilapia fry weighing around 4-5 grams obtained from Balai Benih Ikan (Fish Hatcheries) in Ciparay, Bandung regency, West Java, and c) Fish feed in the form of commercial pellets with crude protein contents of 31% - 33%, crude lipid 3% - 5%, crude fibers 4% - 6%, ash 10% - 13%, and water 11% -13%.

2. Method

The research method used in this study is the experimental Completely Randomized Design (CRD) method, which consists of three treatments, each repeated five times. The types of treatment are listed as the following:

A=Stocking density ratio 75 fry/m² for catfish + 75 fry/m² for nile tilapia

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