

## The growth rate of Nile tilapia *Oreochromis niloticus* fry fed on fermented *Lemna* sp. meal

### Laju pertumbuhan benih ikan nila *Oreochromis niloticus* yang diberi pakan mengandung tepung *Lemna* sp. fermentasi

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#### ABSTRACT

This research aimed to evaluate the supplementation of fermented *Lemna* sp. meal (FLM) in the artificial diet on the growth rate of Nile tilapia *Oreochromis niloticus*. The research design used was complete randomized design consisting of four treatments, namely A (0% FLM), B (20% FLM), C (30% FLM), and D (40% FLM), performed in triplicates. Experimental fish used was Nile tilapia at the initial size of 5–7 cm, fed with feed containing 18% protein content. The parameters observed were the nutritional composition of FLM, specific growth rate (SGR), feed conversion ratio (FCR), survival, and water quality. Fermentation with Effective Microorganism 4 (EM4) has increased crude protein and crude lipid of *Lemna* sp. meal, respectively, by 5.60% and 5.76%. However it decreased its crude fiber content down to 15.27%. The result suggested that supplementation of FLM 0–40% in the artificial diet could give SGR 0.81–1.20%/day, FCR 2.48–2.97; and survival 72%–84% in Nile tilapia. The addition of 40% FLM showed the best result among all treatments.

Key words: *Lemna* meal, EM4, fermentation, Nile tilapia fry

#### ABSTRAK

Tujuan dari penelitian ini adalah untuk mengevaluasi penggunaan tepung *Lemna* sp. fermentasi (TLF) pada pakan buatan terhadap laju pertumbuhan ikan nila *Oreochromis niloticus*. Rancangan penelitian yang digunakan adalah rancangan acak lengkap terdiri atas empat perlakuan, yaitu A (0% TLF), B (20% TLF), C (30% TLF), dan D (40% TLF) dengan masing-masing tiga ulangan. Ikan uji yang digunakan adalah ikan nila dengan ukuran awal 5–7 cm yang diberi pakan mengandung protein 18%. Parameter yang diamati dalam penelitian ini adalah nilai nutrisi TLF, laju pertumbuhan spesifik (LPS) ikan nila, rasio konversi pakan (RKP), sintasan (SR), dan kualitas air. Fermentasi dengan *Effective Microorganism* 4 (EM4) meningkatkan protein kasar dan lemak kasar tepung *Lemna* sp. sebesar masing-masing 5,60% dan 5,76%, akan tetapi menurunkan serat kasar hingga 15,27%. Hasil penelitian menunjukkan bahwa pemberian TLF 0–40% dalam pakan komersial menghasilkan LPS 0,81–1,20%/hari; RKP 2,48–2,97; dan kelangsungan hidup 72%–84%. Pemberian TLF sebanyak 40% merupakan perlakuan yang menunjukkan hasil terbaik.

Kata kunci: tepung *Lemna*, EM4, fermentasi, benih ikan nila

#### INTRODUCTION

One of the critical success factors in aquaculture is the growth rate of the fish. The growth is defined as the increasing size, weight, and length within a certain time. Growth occurs when there is surplus input of energy and amino

acids (proteins) derived from feed. Acquired energy is used for basic metabolic maintenance (i.e. respiration, specific, and dynamic action), excreted out of the body, or available as surplus energy. This excess energy afterward is allocated for gaining weight (somatic growth), gonadal maturation and reproduction, or being stored in