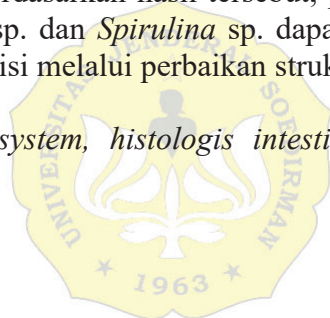


RINGKASAN

Ikan nila (*Oreochromis niloticus*) merupakan komoditas akuakultur bernilai ekonomis tinggi, namun keberhasilan budidayanya masih terkendala oleh pertumbuhan dan kelangsungan hidup benih yang dipengaruhi kualitas pakan. *Green Water System* (GWS) merupakan salah satu solusi alternatif yang menyediakan pakan alami seperti mikroalga dan zooplankton, yang kaya akan protein dan lemak. Penelitian ini bertujuan untuk mengevaluasi pengaruh GWS terhadap pertumbuhan dan struktur histologis intestinum benih ikan nila. Penelitian dilakukan selama 10 bulan menggunakan Rancangan Acak Lengkap (RAL) dengan empat perlakuan dan lima ulangan, yaitu tanpa GWS (K), GWS dengan *Nannochloropsis sp.* (P1), GWS dengan *Spirulina sp.* (P2), dan GWS campuran *Nannochloropsis sp.* dan *Spirulina sp.* (P3). Parameter yang diamati meliputi pertumbuhan, kelangsungan hidup, serta luas permukaan vili intestinum bagian *foregut* dan *midgut*. Data dianalisis secara deskriptif kuantitatif, sedangkan uji statistik menggunakan ANOVA dan Kruskal Wallis dilanjutkan dengan uji BNT 5%. Hasil menunjukkan bahwa perlakuan campuran *Nannochloropsis sp.* dan *Spirulina sp.* memberikan hasil terbaik dengan pertambahan berat $1,21 \pm 0,26$ g, panjang $14,90 \pm 3,25$ mm, laju pertumbuhan relatif $7,51 \pm 0,37$ %, kelangsungan hidup $76,40 \pm 8,05$ %, serta luas vili *foregut* $80,45 \pm 39,74 \mu\text{m}^2$ dan *midgut* $224,81 \pm 137,39 \mu\text{m}^2$. Kualitas air selama penelitian berada dalam kisaran optimal untuk budidaya ikan nila. Berdasarkan hasil tersebut, penggunaan GWS, khususnya campuran *Nannochloropsis sp.* dan *Spirulina sp.* dapat meningkatkan pertumbuhan dan efisiensi penyerapan nutrisi melalui perbaikan struktur histologis intestinum.

Kata kunci: *green water system*, *histologis intestinum*, *Oreochromis niloticus*, *pertumbuhan*



SUMMARY

Tilapia (*Oreochromis niloticus*) is a highly valuable aquaculture commodity, however, its cultivation success is still hindered by the growth and survival rate of fry, which are influenced by feed quality. The Green Water System (GWS) is an alternative solution that provides natural feed sources such as microalgae and zooplankton, which are rich in protein and lipids. This study aims to evaluate the effect of GWS on the growth and intestinal histological structure of tilapia fry. The study was conducted over 10 months using a Completely Randomized Design (CRD) with four treatments and five replications: without GWS (Control), GWS with *Nannochloropsis* sp. (P1), GWS with *Spirulina* sp. (P2), and GWS with a mixture of *Nannochloropsis* sp. and *Spirulina* sp. (P3). Observed parameters included growth, survival rate, and villi surface area of the foregut and midgut sections of the intestine. Data were analyzed quantitatively using descriptive statistics, ANOVA, and Kruskal-Wallis tests, followed by a 5% Least Significant Difference (LSD) test. The results showed that the treatment using a mixture of *Nannochloropsis* sp. and *Spirulina* sp. yielded the best outcomes, with a weight gain of 1.21 ± 0.26 g, length increase of 14.90 ± 3.25 mm, relative growth rate of $7.51 \pm 0.37\%$, survival rate of $76.40 \pm 8.05\%$, and villi surface area of $80.45 \pm 39.74 \mu\text{m}^2$ in the foregut and $224.81 \pm 137.39 \mu\text{m}^2$ in the midgut. Water quality remained within optimal ranges for tilapia culture throughout the study. Based on these results, the application of GWS especially the combination of *Nannochloropsis* sp. and *Spirulina* sp. can enhance growth and nutrient absorption efficiency through improvements in the intestinal histological structure.

Keywords: green water system, intestinal histology, *Oreochromis niloticus*, growth

