ABSTRACT

Natural feed is fish food that comes directly from nature without human intervention, one of which is *Dunaliella sp.* This type of feed plays an important role in fish digestion because it contains complex enzymes. This study aimed to determine the effect of liquid organic fertilizer (LOF) from vegetable waste on the daily density, specific growth rate, population peak, and biomass production of *Dunaliella sp.* The research was conducted from May 5 to May 12, 2025, at the Hatchery and Aquaculture Technology Laboratory, Aquaculture Study Program, Faculty of Agriculture, Malikussaleh University. The method used was a laboratory experiment with a completely randomized design (CRD) non-factorial, consisting of 4 treatments and 3 replications. Treatment P1 used no vegetable LOF (Walne). Treatment P2 applied 2 ml/L of LOF from spinach waste. Treatment P3 applied 2 ml/L of LOF from mustard greens waste. Treatment P4 applied 2 ml/L of LOF from water spinach waste. The results showed that the highest density was obtained in treatment P3 with a peak density of 1993×10^4 cells/ml. The highest population peak was also found in treatment P3 with an average value of 1993.33 cells/ml. The highest specific growth rate was found in treatment P3 with an average value of 0.228 cells/day. The highest biomass was obtained in treatment P3 with an average value of 2.688 g/L. The highest nitrate and phosphate absorption was found in treatment P3 with percentages of 92% and 89%. Water quality during the study remained optimal for the growth of *Dunaliella sp.* Based on statistical analysis of F test (ANOVA), the application of liquid organic fertilizer to different vegetables had a significant effect in daily density, specific growth rate, population peak, and biomass of *Dunaliella sp.* This study provides information that the use of liquid organic fertilizer (LOF) from mustard greens waste shows optimal results in terms of daily density, specific growth rate, population peak, and biomass of *Dunaliella sp.*

Keywords: *Dunaliella sp.*, Cell density, Growth rate, LOF,

ABSTRAK

Pakan alami merupakan makanan ikan yang berasal langsung dari alam tanpa campur tangan manusia salah satunya yaitu *Dunaliella* sp. Pakan jenis ini memiliki peran penting dalam pecernaan ikan karena menhgandung enzim yang kompleks. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian pupuk organik cair limbah sayuran terhadap kepadatan harian, laju pertumbuhan spesifik, puncak populasi, dan produksi biomassa *Dunaliella* sp. Penelitian ini dilaksanakan pada tanggal 5 Mei-12 Mei 2025 yang bertempat di Laboratorium Hatchery dan Teknologi Budidaya, Program Study Akakultur, Fakultas Pertanian Universitas Malikussaleh. Metode yang digunakan adalah eksperimental laboratorium menggunakan rancangan acak lengkap (RAL) non faktorial yang terdiri dari 4 perlakuan dan 3 ulangan. Perlakuan P1 tanpa menggunakan POC sayur (walne). Perlakuan P2 pemberian 2 ml/L POC limbah sayur bayam. Perlakuan P3 pemberian 2 ml/L POC limbah sayur sawi. Perlakuan P4 pemberian 2 ml/L POC limbah sayuir kangkung. Hasil penelitian menunjukkan bahwa kepadatan tertinggi diperoleh pada perlakuan P3 dengan puncak kepadatan mencapai 1993,33 $\times 10^4$ sel/ml. Puncak populasi tertinggi terdapat pada perlakuan P3 dengan nilai rata-rata 1993,33 sel/ml. Laju pertumbuhan spesifik tertinggi terdapat pada perlakuan P3 dengan nilai rata-rata 0,228 sel/hari. Biomassa tertinggi terdapat pada perlakuan P3 dengan nilai rata-rata 2,688 g/L. Penyerapan kandungan nitrat dan fosfat tertinggi terdapat pada perlakuan P3 dengan persentase 92% dan 89%/. Kualitas air selama penelitian *Dunaliella* sp. masih optimal untuk pertumbuhan *Dunaliella* sp. Berdasarkan analisis statistik uji F (ANOVA) pemberian pupuk organik cair limbah sayuran berbeda berpengaruh nyata terhadap kepadatan harian, laju pertumbuhan spesifik, puncak populasi, dan biomassa *Dunaliella* sp. Penelitian ini memberikan informasi mengenai penggunaan pupuk organik cair (POC) limbah sayur sawi menunjukan hasil yang optimal dari kepadatan harian, laju pertumbuhan spesifik, puncak populasi, dan biomassa *Dunaliella* sp.

Kata Kunci: *Dunaliella* sp. ,Kepadatan sel, Laju pertumbuhan, POC