

ABSTRACT

Dunaliella sp. is a type of natural fish food that is high in protein and has great potential to be used as a feed supplement for fish farming. The nutritional content of *Dunaliella* sp. includes 57% protein, 32% carbohydrate, and 6% fat. The main problem in cultivating *Dunaliella* sp. is the challenge of biomass production in meeting the nutrient needs required to support its growth and nutrition. *Dunaliella* requires macro and micro nutrients in sufficient quantities to encourage growth and nutrition, especially protein in *Dunaliella* sp. The solution to this problem is to utilize quail manure fertilizer, which is a waste product for quail farmers. The purpose of this study was to determine the effect of quail manure fertilizer on protein content, biomass production, daily density, peak population, and specific growth rate of *Dunaliella* sp. This research was conducted on May 25 to May 31, 2025, which took place at the Hatchery and Cultivation Technology Laboratory, Aquaculture Study Program, Faculty of Agriculture, Malikussaleh University. This research used a Non-Factorial Completely Randomized Design (CRD) consisting of 4 treatments and each was repeated 3 times. Treatment A Control (walne fertilizer media), B 50 g/L quail manure fertilizer, C 100 g/L quail manure fertilizer, D 150 g/L quail manure fertilizer. Based on the statistical analysis of the F test (ANOVA), the provision of quail manure fertilizer affected the protein content, biomass production, peak population and specific growth rate of *Dunaliella* sp. The best results were in treatment C 100 g/L of quail manure with a protein content value of 20,03%, dry biomass of 0,908 g/L, peak population of $1413,33 \times 10^4$ cells/ml and a specific growth rate of 0,198 cells/day. The results of water quality measurements in the culture media showed a temperature range of 25,1–26,9 °C, salinity range of 34–35 ppt, DO range of 6,15–7,77 ppm, pH range of 7,30–8,5, initial phosphate range of 5,018–11,348 mg/L, final phosphate range of 1,018–3,143 mg/L, initial nitrate range of 3,739–6,248 mg/L, and final nitrate range of 0,682–1,050 mg/L.

Keywords: *Dunaliella* sp., quail droppings, protein.

ABSTRAK

Dunaliella sp. adalah jenis pakan alami ikan yang tinggi protein yang sangat potensial untuk digunakan sebagai tambahan pakan untuk budidaya ikan. Kandungan nutrisi pada *Dunaliella* sp. mencakup protein 57 %, karbohidrat 32%, lemak 6%. Permasalahan utama dalam kultur *Dunaliella* sp. adalah tantangan produksi biomassa dalam pemenuhan kebutuhan unsur hara yang diperlukan untuk mendukung pertumbuhan serta nutrisinya. *Dunaliella* membutuhkan unsur hara makro maupun mikro dalam jumlah yang cukup untuk mendorong pertumbuhan dan nutrisi terutama protein pada *Dunaliella* sp. Solusi dari permasalahan ini adalah memanfaatkan pupuk kotoran burung puyuh yang menjadi limbah bagi peternak burung puyuh. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh pemberian pupuk kotoran burung puyuh terhadap kandungan protein, produksi biomassa, kepadatan harian, puncak populasi dan laju pertumbuhan spesifik *Dunaliella* sp. Penelitian ini dilaksanakan pada tanggal 25 Mei sampai 31 Mei 2025 yang bertempat di Laboratorium Hatchery dan Teknologi Budidaya, Program Studi Akuakultur, Fakultas Pertanian, Universitas Malikussaleh. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) Non-Faktorial yang terdiri dari 4 perlakuan dan masing masing dilakukan 3 kali ulangan. Perlakuan A Kontrol (media pupuk walne), B 50 g/L pupuk kotoran burung puyuh, C 100 g/L pupuk kotoran burung puyuh, D 150 g/L pupuk kotoran burung puyuh. Berdasarkan analisis statistik uji F (ANOVA) pemberian pupuk kotoran burung puyuh berpengaruh terhadap kandungan protein, produksi biomassa, puncak populasi dan laju pertumbuhan spesifik *Dunaliella* sp. Hasil terbaik pada perlakuan C 100 g/L kotoran burung puyuh dengan nilai kandungan protein yaitu 20,03 %, biomassa kering 0,908 g/L, puncak populasi $1413,33 \times 10^4$ sel/ml dan laju pertumbuhan spesifik 0,198 sel/hari. Hasil pengukuran kualitas air media kultur menunjukkan nilai suhu berkisar 25,1–26,9 °C, salinitas berkisar 34–35 ppt, DO berkisar 6,15–7,77 ppm, pH berkisar 7,30–8,5, fosfat awal berkisar 5,018–11,348 mg/L, fosfat akhir berkisar 1,018–3,143 mg/L, nitrat awal berkisar 3,739 – 6,248 mg/L dan nitrat akhir berkisar 0,682–1,050 mg/L.

Kata kunci: *Dunaliella* sp, kotoran burung puyuh, protein.