

Intisari

Daya Serap *Sargassum polycystum* C.Agardh (1824) terhadap Nitrogen dan Fosfor dari Air Tambak Budidaya Udang Vaname

Perkembangan budidaya perikanan saat ini menimbulkan permasalahan berupa pencemaran limbah cair yang dihasilkan selama proses produksi. Limbah cair budidaya perikanan mengandung bahan organik dengan konsentrasi yang sangat tinggi. Penelitian ini bertujuan untuk mengetahui kemampuan *Sargassum polycystum* sebagai biofilter air budidaya udang vaname, daya serap terhadap nitrogen dan fosfat, dan pertumbuhan dalam air budidaya udang vaname. Penelitian dilaksanakan di Unit Kerja Budidaya Air Laut Sundak, Gunungkidul pada bulan November-Desember 2020. Penelitian dilakukan dengan metode Rancangan Acak Lengkap (RAL) yang terdiri dari 3 perlakuan kepadatan dan 3 ulangan, yaitu kepadatan *Sargassum polycystum* 1; 2; dan 3 gL⁻¹. Parameter yang diamati antara lain: kualitas air berupa nitrat, fosfat, suhu, salinitas, pH, *Dissolved O₂*, TSS (*Total Suspended Solid*), dan TDS (*Total Dissolved Solid*); biomassa rumput laut; dan daya serap rumput laut terhadap nitrogen dan fosfor. Hasil penelitian menunjukkan bahwa perlakuan 3(3 gL⁻¹) memiliki persentase terbesar dalam menyerap nitrat sebesar 80% dan konsentrasi fosfat dengan rerata sebesar 86,30%. Penyerapan nitrogen dan fosfor total paling baik pada perlakuan 2(2 gL⁻¹), yaitu -172,5% untuk N total dan 19 % untuk P total. Rerata kualitas air yang terukur selama penelitian yaitu suhu 27,5 °C; salinitas 30,3 ppt; *Dissolved O₂* 5,9 mgL⁻¹, pH 7,2; *Total Dissolved Solid* 33,5 mgL⁻¹; dan *Total Suspended Solid* 4215 mgL⁻¹. *Sargassum polycystum* memiliki kemampuan sebagai biofilter air budidaya udang vaname karena dapat menurunkan kadar nitrat dan fosfat air dan menyerapnya ke dalam *thallus*.

Kata kunci: biofilter, fosfat, nitrogen, *Sargassum polycystum*, udang vaname.

Abstract

Absorbability of *Sargassum polycystum* C.Agardh (1824) to Nitrogen and Phosphorus in Water from Vaname Shrimp Cultivation Pond

The development of aquaculture is currently causing problems in the form of liquid waste pollution generated during the production process. Aquaculture liquid waste contains very high concentrations of organic matter. This study aims to determine the ability of *Sargassum polycystum* as a biofilter for white shrimp culture, the absorption of nitrogen and phosphate, and growth in white shrimp culture water. The research was carried out at the Unit Kerja Budidaya Air Laut (UKBAL) Sundak, Gunungkidul in November-December 2020. The study was conducted using a Completely Randomized Design (CRD) method consisting of 3 density treatments and 3 replications, namely *Sargassum polycystum* 1 density; 2; and 3 gL⁻¹. Parameters observed were: water quality in the form of nitrate, phosphate, temperature, salinity, pH, *Dissolved* O₂, TSS (Total Suspended Solid), and TDS (Total Dissolved Solid); seaweed biomass; and the absorption of seaweed to nitrogen and phosphorus. The results showed that treatment 3(3 gL⁻¹) had the largest percentage in absorbing nitrate by 80% and phosphate concentration with an average of 86,30%. The best absorption of total nitrogen and phosphorus in treatment 2 (2 gL⁻¹), namely -172.5% for total N and 19% for total P. The average water quality measured during the study was a temperature of 27,5 °C; salinity 30,3 ppt; *Dissolved* O₂ 5,9 mgL⁻¹, pH 7,2; *Total Dissolved Solid* 33,5 mgL⁻¹; and *Total Suspended Solid* 4215 mgL⁻¹. *Sargassum polycystum* has the ability as a biofilter for vaname shrimp culture because it can reduce nitrate and phosphate levels in water and absorb them into the thallus.

Key words: biofilter, nitrogen, phosphate, *Sargassum polycystum*., shrimp.