

ABSTRAK

Budidaya udang vaname (*Litopenaeus vannamei*) secara intensif memiliki potensi produksi tinggi, namun rentan terhadap penurunan kualitas air yang memicu kematian massal. Salah satu faktor utama adalah *blooming Blue-Green Algae* (BGA) atau *Cyanobacteria*, seperti *Microcystis*, *Oscillatoria*, dan *Anabaena*, yang berpotensi menghasilkan racun microcystin dan mengganggu keseimbangan ekosistem. Penelitian terdahulu menunjukkan bahwa kelimpahan BGA di atas ambang batas berisiko tinggi terhadap organisme budidaya. Penelitian ini bertujuan mengetahui hubungan antara kelimpahan BGA dan tingkat mortalitas udang vaname pada sistem tambak intensif. Penelitian dilaksanakan pada Desember 2024–Februari 2025 di kolam B2 dan B4 dengan luas 1.000 m² dengan padat tebar 131 ekor/m² di Koperasi Hurang Jaya Makmur, Cilacap. Data dikumpulkan melalui pengambilan sampel air dua kali seminggu, BGA diamati secara mikroskopis (40x), dan dianalisis menggunakan regresi linear dengan parameter pendukung kualitas air, yaitu *Total Organic Matter* (TOM), kecerahan, dan pH. Hasil menunjukkan puncak kelimpahan BGA mencapai 190.000 sel/mL (B2) dan 250.000 sel/mL (B4) yang bertepatan dengan lonjakan mortalitas udang, masing-masing 531 dan 370 ekor. Analisis regresi menunjukkan hubungan positif dengan nilai R² sebesar 0,546 (B2) dan 0,5688 (B4). Temuan ini menegaskan bahwa dominasi BGA berkontribusi signifikan terhadap kematian udang, sehingga pemantauan kualitas air dan pengendalian *Cyanobacteria* sangat penting dalam manajemen tambak intensif.

Kata kunci: *Blue-Green Algae; sistem intensif; udang vaname; mortalitas*

ABSTRACT

*Intensive cultivation of vaname shrimp (*Litopenaeus vannamei*) offers high production potential but is highly vulnerable to water quality deterioration, which may lead to mass mortality. One of the major challenges is the blooming of Blue-Green Algae (BGA) or Cyanobacteria, such as *Microcystis*, *Oscillatoria*, and *Anabaena*, which are capable of producing toxins like microcystin and disrupting pond ecosystems. Previous studies have highlighted that BGA abundance above the threshold poses serious risks to cultured organisms. This study aimed to determine the relationship between BGA abundance and shrimp mortality in an intensive aquaculture system. The research was conducted from December 2024 to February 2025 in ponds B2 and B4, each 1,000 m² with a stocking density of 131 shrimp/m², located at Koperasi Hurang Jaya Makmur, Cilacap. Water samples were collected twice weekly, observed microscopically (40x), and analyzed using linear regression along with supporting water quality parameters, namely Total Organic Matter (TOM), transparency, and pH. Results showed peak BGA abundance of 190,000 cells/mL (B2) and 250,000 cells/mL (B4), coinciding with shrimp mortality peaks of 531 and 370 individuals, respectively. Regression analysis revealed a positive relationship, with R² values of 0.546 (B2) and 0.5688 (B4). These findings confirm that BGA dominance significantly contributes to shrimp mortality, emphasizing the importance of water quality monitoring and Cyanobacteria control in intensive pond management.*

Keywords: Blue-Green Algae; intensive system; vaname shrimp; mortality