

Intisari

Hubungan Kualitas Air dengan Produktivitas Tambak Udang Vaname (*Penaeus vannamei*, Boone 1931) di PT Riung Agro Lestari, Kabupaten Cianjur

Penelitian ini bertujuan untuk menganalisis hubungan kualitas air dengan produktivitas, serta kualitas air dengan sintasan udang vaname (*Penaeus vannamei*, Boone 1931) di PT Riung Agro Lestari, Kabupaten Cianjur. Penelitian ini menggunakan data sekunder yang meliputi parameter kualitas air, serta produktivitas, dan sintasan udang vaname dari dua periode budidaya (November 2024–Januari 2025 dan Maret–Juni 2025). Parameter kualitas air yang dianalisis meliputi suhu air, konsentrasi oksigen terlarut, pH air, alkalinitas, salinitas, total bahan organik, kecerahan, jumlah *Vibrio* sp., jumlah bakteri total, jumlah plankton total, dan amonia nitrogen total. Analisis data dilakukan menggunakan t-test untuk mengetahui perbedaan antar periode budidaya serta analisis regresi linear berganda untuk mengetahui pengaruh kualitas air terhadap produktivitas dan sintasan udang vaname. Hasil penelitian menunjukkan bahwa rata-rata produktivitas udang vaname sebesar $32,87 \pm 6,70$ ton/ha/siklus dengan sintasan $91,01 \pm 7,63\%$. Produktivitas dan sintasan udang vaname pada periode November 2024–Januari 2025 ($28,13 \pm 4,95$ ton/ha/siklus; $85,61 \pm 10,31\%$) lebih rendah ($P < 0,05$) dibandingkan periode Maret–Juni 2025 ($37,60 \pm 2,64$ ton/ha/siklus; $96,40 \pm 4,91\%$). Analisis kualitas air menunjukkan bahwa suhu air, pH air, alkalinitas, salinitas, total bahan organik, kecerahan, dan jumlah *Vibrio* sp. berbeda nyata ($P < 0,05$) antar periode budidaya dan diduga menjadi penyebab rendahnya produktivitas dan sintasan udang vaname pada periode November 2024–Januari 2025. Hasil analisis regresi linear berganda menunjukkan bahwa kualitas air berpengaruh ($P < 0,05$) terhadap produktivitas dengan nilai koefisien determinasi (R^2) sebesar 0,824 (82,4%). Parameter yang berpengaruh ($P < 0,05$) terhadap produktivitas tersebut adalah suhu air, salinitas, total bahan organik, dan jumlah bakteri *Vibrio* sp. Sedangkan hasil analisis regresi linear berganda terhadap sintasan, menunjukkan bahwa hanya jumlah *Vibrio* sp. yang berpengaruh nyata ($P < 0,05$) dengan nilai R^2 sebesar 0,530 (53,0%). Secara keseluruhan, hasil penelitian ini menunjukkan bahwa kualitas air mempengaruhi secara nyata ($P < 0,05$) terhadap produktivitas dan sintasan udang vaname di PT Riung Agro Lestari.

Kata kunci: kualitas air, produktivitas, sintasan, udang vaname.

Abstract

The Relationship of Water Quality and Productivity of Whiteleg Shrimp (*Penaeus vannamei*, Boone 1931) Ponds at PT Riung Agro Lestari, Cianjur Regency

This study aims to analyze the relationship of water quality and productivity, as well as water quality and survival of whiteleg shrimp (*Penaeus vannamei*, Boone 1931) at PT Riung Agro Lestari, Cianjur Regency. This study used secondary data covering water quality parameters, productivity, and survival of whiteleg shrimp from two culture periods (November 2024–January 2025 and March–June 2025). The water quality parameters analyzed included water temperature, dissolved oxygen concentration, water pH, alkalinity, salinity, total organic matter, clarity, number of *Vibrio* sp., total number of bacteria, total number of plankton, and total ammonia nitrogen. Data analysis was carried out using a t-test to determine differences between cultivation periods and multiple linear regression analysis to determine the effect of water quality on productivity and survival of whiteleg shrimp. The results showed that the average productivity of whiteleg shrimp was 32.87 ± 6.70 tons/ha/cycle with a survival rate of $91.01 \pm 7.63\%$. Productivity and survival of whiteleg shrimp in the period November 2024–January 2025 (28.13 ± 4.95 tons/ha/cycle; $85.61 \pm 10.31\%$) were lower ($P < 0.05$) than the period March–June 2025 (37.60 ± 2.64 tons/ha/cycle; $96.40 \pm 4.91\%$). Water quality analysis showed that water temperature, water pH, alkalinity, salinity, total organic matter, clarity, and the number of *Vibrio* sp. were significantly different ($P < 0.05$) between culture periods and were suspected to be the cause of low productivity and survival of whiteleg shrimp in the period November 2024–January 2025. The results of multiple linear regression analysis showed that water quality had an effect ($P < 0.05$) on productivity with a coefficient of determination (R^2) of 0.824 (82.4%). Parameters that had an effect ($P < 0.05$) on productivity were water temperature, salinity, total organic matter, and the number of *Vibrio* sp. bacteria. Meanwhile, the results of multiple linear regression analysis on survival showed that only the number of *Vibrio* sp. had a significant effect ($P < 0.05$) with an R^2 value of 0.530 (53.0%). Overall, the results of this study indicate that water quality has a significant effect ($P < 0.05$) on the productivity and survival of whiteleg shrimp at PT Riung Agro Lestari.

Keywords: water quality, productivity, survival, whiteleg shrimp.