

RINGKASAN

Zumair Rahman, Npm. 05172011008. **Total Bakteri Nitrifikasi pada Air Pendederan Budidaya Udang Vaname (*Litopenaeus vannamei*) Sistem Bioflok Dengan Penambahan Probiotik dan Fitobiotik Melalui Pakan.** Progam Studi Budidaya Perairan, Fakultas Perikanan dan Ilmu Kelautan, Universitas Khairun. Dibawah bimbingan Juharni, S.Pi., M.Si dan Dr. Waode Munaeni, S.Pi., MSi.

Udang vaname (*Litopenaus vannamei*) merupakan salah satu organisme akuatik yang memiliki nilai ekonomi tinggi. Upaya untuk meningkatkan produksi udang vaname adalah melalui aplikasi teknologi bioflok dengan penambahan probiotik dan fitobiotik. Tujuan dilakukannya penelitian ini yaitu untuk; (1) mengetahui perbedaan total bakteri nitrifikasi yang dapat ditumbuhkan pada media agar dari air kolam pendedaran budidaya udang vaname sistem bioflok dengan penambahan probiotik dan fitobiotik melalui pakan; (2) Mengetahui kondisi kualitas air di kolam pendederan budidaya udang vaname sistem bioflok dengan penambahan probiotik dan fitobiotik melalui pakan; dan (3) Mengetahui ada dan tidaknya hubungan parameter kualitas air terhadap total bakteri nitrifikasi dari air pendederan budidaya udang vaname sistem bioflok dengan penambahan probiotik dan fitobiotik melalui pakan. Pengambilan sampel dan kultur bakteri pada penelitian ini dilaksanakan pada bulan September hingga Oktober 2023, dilakukan di kolam pemeliharaan budidaya udang vaname di Desa Aketobololo, Kecamatan Oba Tengah, Kota Tidore Kepulauan, dan di Laboratorium Sistem dan Teknologi (SISTEK) Program Studi Budidaya Perairan, Fakultas Perikanan dan Ilmu Kelautan, Universitas Khairun. Serta analisis data dilakukan pada bulan Juni 2024. Perlakuan pada penelitian ini terdiri atas 4 perlakuan dengan penambahan probiotik dan fitobiotik melalui pakan. Perlakuan kolam A dengan kombinasi penambahan probiotik fitobiotik, kolam B dengan penambahan probiotik, kolam C dengan penambahan fitobiotik, dan kolam D kontrol atau tidak ada penambahan baik probiotik maupun fitobiotik. Parameter yang diamati dalam penelitian ini adalah total bakteri nitrifikasi dan kualitas air pada air budidaya selama lima minggu pemeliharaan. Hasil penelitian menunjukkan bahwa Tidak terdapat perbedaan total bakteri secara signifikan ($p > 0,05$) dari semua kolam perlakuan baik pada kolam A dan B, serta C dan D. Namun pada kolam A dan B total bakteri nitrifikasi masih lebih tinggi dibandingkan dengan kolam C dan D. Dimana total bakteri nitrifikasi pada kolam A berkisar 4,28–8,54 Log 10 CFU/mL dan kolam B berkisar 4,06–8,03 Log 10 CFU/mL, sedangkan pada kolam C berkisar 4,15–7,78 Log 10 CFU/mL dan kolam D berkisar 4,21–7,80 Log 10 CFU/mL. Kondisi kualitas air seperti suhu, pH, kadar oksigen, salinitas, nitrat, nitrit, dan amonia berada dalam kisaran normal pada pemeliharaan udang vaname dalam sistem bioflok. Terdapat hubungan secara signifikan ($p < 0,05$) antara kualitas air terhadap total bakteri nitrifikasi pada setiap kolam perlakuan, dimana hubungan antara kualitas air terhadap kolam A sebesar 98%, kolam B 99%, kolam C 97%, dan kolam D 95%.

Kata Kunci: Bakteri Nitrifikasi, Bioflok, Fitobiotik, Kualitas Air, Probiotik, Udang Vaname (*Litopenaeus vannamei*).

SUMMARY

Zumair Rahman, Npm. 05172011008. **Total Nitrifying Bacteria in Nursery Water of Whiteleg Shrimp (*Litopenaeus vannamei*) Biofloc System with Addition of Probiotics and Phytobiotics Through Feed.** Aquaculture Study Program, Faculty of Fisheries and Marine Sciences, Khairun University. Under the guidance of Juharni, S.Pi., M.Si and Dr. Waode Munaeni, S.Pi., MSi.

Whiteleg shrimp (*Litopenaeus vannamei*) is one of the aquatic organisms that has high economic value. Efforts to increase whiteleg shrimp production are through the application of biofloc technology with the addition of probiotics and phytobiotics. The purpose of this study was to; (1) determine the difference in total nitrifying bacteria that can be grown on agar media from the water of the biofloc shrimp nursery pond with the addition of probiotics and phytobiotics through feed; (2) Determine the condition of water quality in the biofloc shrimp nursery pond with the addition of probiotics and phytobiotics through feed; and (3) Determine whether or not there is a relationship between water quality parameters and total nitrifying bacteria from the biofloc shrimp nursery water with the addition of probiotics and phytobiotics through feed. Sampling and bacterial culture in this study were carried out from September to October 2023, carried out in the vaname shrimp cultivation pond in Aketobololo Village, Oba Tengah District, Tidore Islands City, and in the Systems and Technology Laboratory (SISTEK) of the Aquaculture Study Program, Faculty of Fisheries and Marine Sciences, Khairun University. And data analysis was carried out in June 2024. The treatment in this study consisted of 4 treatments with the addition of probiotics and phytobiotics through feed. Treatment of pond A with a combination of the addition of probiotics and phytobiotics, pond B with the addition of probiotics, pond C with the addition of phytobiotics, and pond D control or no addition of either probiotics or phytobiotics. The parameters observed in this study were the total nitrifying bacteria and water quality in the cultivation water for five weeks of maintenance. The results of the study showed that there was no significant difference in total bacteria ($p > 0.05$) from all treatment ponds, both in ponds A and B, as well as C and D. However, in ponds A and B, the total nitrifying bacteria were still higher compared to ponds C and D. Where the total nitrifying bacteria in pond A ranged from 4.28-8.54 Log 10 CFU/mL and pond B ranged from 4.06-8.03 Log 10 CFU/mL, while in pond C it ranged from 4.15-7.78 Log 10 CFU/mL and pond D ranged from 4.21-7.80 Log 10 CFU/mL. Water quality conditions such as temperature, pH, oxygen levels, salinity, nitrate, nitrite, and ammonia are within the normal range for maintaining vaname shrimp in the biofloc system. There is a significant relationship ($p < 0.05$) between water quality and total nitrifying bacteria in each treatment pond, where the relationship between water quality and pond A is 98%, pond B 99%, pond C 97%, and pond D 95%.

Keywords: Nitrifying Bacteria, Biofloc, Phytobiotics, Water Quality, Probiotics, Whiteleg Shrimp (*Litopenaeus vannamei*).