

INTISARI

Pengaruh Pemberian Kapur Kalsit (CaCO_3) dan Kapur Tohor (CaO) terhadap Kualitas Air dan Pertumbuhan Udang Vaname (*Litopenaeus vannamei*, Boone 1931)

Penelitian telah dilakukan untuk mengetahui pengaruh pemberian kapur kalsit (CaCO_3) dan kapur tohor (CaO) terhadap kualitas air dan pertumbuhan udang vaname (*Litopenaeus vannamei*, Boone 1931), serta untuk mengetahui perlakuan yang memberikan pertumbuhan paling tinggi. Penelitian ini dilaksanakan pada bulan Oktober 2024-Januari 2025 di Unit Kerja Budidaya Air Payau (UK-BAP) Samas, Bantul, Yogyakarta. Penelitian ini terdiri dari 4 perlakuan pemberian kapur yang meliputi kontrol (0 mgCa.L^{-1}), CaCO_3 (4 mgCa.L^{-1}), CaO (4 mgCa.L^{-1}), dan campuran kedua kapur CaCO_3 (2 mgCa.L^{-1})+ CaO (2 mgCa.L^{-1}), masing-masing perlakuan dengan 3 kali ulangan. Benur udang vaname yang digunakan yaitu PL10 yang diperoleh dari Hatchery PT. Suri Tani Pemuka Unit Carita. Pemeliharaan udang dilakukan selama 91 hari dalam bak *conical* bervolume 100 liter air, sebanyak 20 ekor/bak. Selama pemeliharaan udang, air dalam bak *conical* diberi aerasi dan dilakukan sifon dua kali dalam satu pekan. Pakan diberikan berdasarkan biomassa dan umur udang dengan dosis 25-5% berat udang. Pengamatan dilakukan terhadap kualitas air dan udang vaname yang dipelihara. Parameter kualitas air yang diamati meliputi suhu, pH, salinitas, O_2 terlarut CO_2 bebas, alkalinitas, dan amonia. Parameter pertumbuhan udang vaname yang diamati meliputi sintasan, berat mutlak, berat spesifik, panjang mutlak, panjang spesifik, dan rasio konversi pakan yang dianalisis secara statistik dengan analisis sidik ragam (*Analysis of Variance*), uji lanjut Duncan dengan tingkat kepercayaan 95%. Data kualitas air dianalisis secara deskriptif. Hasil penelitian menunjukkan bahwa kualitas air budidaya udang vaname yang dipelihara selama 91 hari dengan perlakuan pemberian kapur menunjukkan hasil suhu, pH, salinitas, oksigen terlarut, karbon dioksida bebas, dan amonia antar perlakuan tidak jauh berbeda. Nilai alkalinitas antar perlakuan menunjukkan hasil yang berbeda. Hasil penelitian juga menunjukkan bahwa perlakuan pemberian kapur yang berbeda tidak berpengaruh nyata terhadap sintasan dan rasio konversi pakan, namun berbeda nyata terhadap pertumbuhan. Pertumbuhan berat mutlak, berat spesifik, panjang mutlak, dan panjang spesifik udang vaname dengan perlakuan kontrol (0 mgCa.L^{-1}), CaCO_3 (4 mgCa.L^{-1}), dan CaO (4 mgCa.L^{-1}) tidak beda nyata. Ketiga perlakuan ini berbeda nyata dengan perlakuan pemberian kapur campuran CaCO_3 (2 mgCa.L^{-1})+ CaO (2 mgCa.L^{-1}). Perlakuan pemberian kapur campuran CaCO_3 (2 mgCa.L^{-1})+ CaO (2 mgCa.L^{-1}) memberikan hasil paling tinggi pada pertumbuhan berat mutlak $18,04 \pm 0,69 \text{ g/ekor}$; berat spesifik $0,07325 \pm 0,00041 \text{ \%/hari}$; panjang mutlak $12,51 \pm 0,41 \text{ cm/ekor}$; dan panjang spesifik $0,02643 \pm 0,00033 \text{ \%/hari}$.

Kata kunci: kalsit (CaCO_3), kualitas air, pertumbuhan, tohor (CaO), udang vaname

ABSTRACT

Effect of Calcite Lime (CaCO_3) and Quicklime (CaO) on Water Quality and Growth of Whiteleg Shrimp (*Litopenaeus vannamei*, Boone 1931)

Research had been carried out to determine the effects of applying calcite lime (CaCO_3) and quicklime (CaO) on water quality and the growth of whiteleg shrimp (*Litopenaeus vannamei*, Boone 1931), as well as to identify the treatment that results in the highest growth. The research was carried out from October 2024 to January 2025 at the Brackish Water Aquaculture Unit (UK-BAP) in Samas, Bantul, Yogyakarta. The study included four lime treatment groups: a control (0 mgCa.L^{-1}), CaCO_3 (4 mgCa.L^{-1}), CaO (4 mgCa.L^{-1}), and a combination of both limes CaCO_3 (2 mgCa.L^{-1}) + CaO (2 mgCa.L^{-1}), with each treatment replicated three times. The shrimp used were PL10 post-larvae obtained from PT. Suri Tani Pemuka Hatchery, Carita Unit. The shrimp were reared for 91 days in 100 liter water of conical tanks, with 20 individuals per tank. During the rearing period, aeration was provided, and siphoning was performed twice a week. Feed was given according to the shrimp's age and biomass at a dosage of 25–5% of body weight. Observations were made on water quality and shrimp performance. Water quality parameters observed included temperature, pH, salinity, dissolved oxygen, free CO_2 , alkalinity, and ammonia. Shrimp growth parameters measured included survival rate, absolute weight, specific growth rate (weight), absolute length, specific growth rate (length), and feed conversion ratio. Statistical analysis was performed using analysis of variance (ANOVA) and Duncan's multiple range test at a 95% confidence level. Water quality data were analyzed descriptively. The results showed that during the 91-day culture period, the application of lime did not cause significant differences in temperature, pH, salinity, dissolved oxygen, free carbon dioxide, or ammonia levels across treatments. However, alkalinity levels varied among the treatments. The study also found that different lime treatments had no significant effect on survival rate or feed conversion ratio, but did have a significant effect on growth. The absolute weight, specific weight, absolute length, and specific length growth of shrimp in the control (0 mgCa.L^{-1}), CaCO_3 (4 mgCa.L^{-1}), and CaO (4 mgCa.L^{-1}) treatments did not differ significantly. However, these three treatments were significantly different from the mixed lime treatment CaCO_3 (2 mgCa.L^{-1}) + CaO (2 mgCa.L^{-1}). The mixed lime treatment CaCO_3 (2 mgCa.L^{-1}) + CaO (2 mgCa.L^{-1}) resulted in the highest growth performance, with an absolute weight of $18.04 \pm 0.69 \text{ g/shrimp}$, specific growth rate (weight) of $0.07325 \pm 0.00041 \text{ \%/day}$, absolute length of $12.51 \pm 0.41 \text{ g/shrimp}$, and specific growth rate (length) of $0.02643 \pm 0.00033 \text{ \%/day}$.

Keywords: calcite lime (CaCO_3), water quality, growth, quicklime (CaO), whiteleg shrimp