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Sustainable Aquaculture for a Secure Future

Title: Study on variation characteristics and correlation analysis of major ecological factors in intensive shrimp ponds

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Abstract: To study the variation characteristics and correlation of major ecological factors in intensive shrimp farming ponds, we measured 16 aquatic ecological factors including the concentration of chlorophyll a (Chl-a) as well as the density of zooplankton, heterotrophic bacteria and vibrio, active phosphorus ($\text{PO}_4^{3-}\text{-P}$), etc. in 3 farming ponds of *Litopenaeus vannamei* in Paipu, Danzhou, from April to July in 2011. The results show that the values of DO, pH and transparency decreased slowly, and the total suspended solids (TSS), chemical oxygen demand (COD), nitrite nitrogen ($\text{NO}_2^-\text{-N}$), ammonia nitrogen ($\text{NH}_4^+\text{-N}$) as well as the density of zooplankton, heterotrophic bacteria and vibrio slowly increased during the culture period. The concentration of Chl-a was low in the earlier stage but increased gradually in the mid and latter stages; Chl-a had a very significant positive correlation with $\text{NO}_3^-\text{-N}$ and a negative correlation with $\text{PO}_4^{3-}\text{-P}$. The density of Copepod had a very significantly positive correlation with TSS and a significantly positive correlation with the density of heterotrophic bacteria, vibrio and rotifer, but had no significant correlation with Chl-a and COD. The density of heterotrophic bacteria had a very significant positive correlation with COD and TSS, but had a significantly negative correlation with transparency. The density of vibrio was very significantly correlated with TSS and COD, but had a significantly negative correlation with pH and DO.

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