Chawalit Akkarakahasin 2009: Efficiency of a Newly Developed Oxygen Injection System in Farm-reared Pacific White Shrimp (*Litopenaeus vannamei*).
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Comparison between paddle wheel aerators plus oxygen injection system and entirely paddle wheel aerators on pond-reared Pacific white shrimp (*Litopenaeus vannamei*) was studied. Six ponds with an area of approximately 9,600 m^2 (6 rai) were used and divided into two groups. Three experimental ponds were installed with four 3-hp electric motors and oxygen injection system, while three control ponds were installed with eight 3-hp electric motors. The postlarvae stages 12 were stocked at the density of 120,000 shrimp/rai (75 shrimp/m^2) and reared in water salinity ranging from 5-10 ppt for 110 days. Yields and survival rates in the experimental ponds were 1,217±50.48 kg/rai and 70.2±5.67% respectively, which were significantly higher ($p<0.05$) than in the control ponds at 925±93.36 kg/rai and 55.6±2.75%, respectively. The average net profit in the experimental ponds was 49,393 baht/rai compared to 30,695 baht/rai for the control ponds.

In the experimental ponds, dissolved oxygen in the morning was an average of 5.36±0.766 mg/l, which was significantly higher than 4.84±0.636 mg/l in the control ponds. The daily dissolved oxygen in the experimental ponds between 24.00 and 06.00 hours was significantly higher than in the control ponds. There was no significantly different between the redox potential value of the soil in the feeding area of the experimental and the control ponds, while the average redox potential values of the soil in the middle of the experimental ponds of -94.4±28 mv was significantly higher ($p<0.05$) than the -141.5±33.4 mv of the control ponds. In conclusion, this study indicates that use of an oxygen injection system cooperating with paddle wheel aerators could increase yields and survival rates due to higher dissolved oxygen and better condition of the pond bottom.

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