

Title	Effects of PVC pipe-substrate and the claw-cutting technique on the growth, survival and yield of freshwater prawn (<i>Macrobrachium rosenbergii</i> de Man)
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ABSTRACT

This study evaluated the effects of substrate colors, PVC-substrate, culture season and different stocking density on productivity of freshwater prawn that was raised in northern Thailand. The experiment was conducted at the Faculty of Fisheries Technology and Aquatic Resources, Maejo University, Chiang Mai, Thailand. This study was divided into three experiments; each treatment was replicated three times. The first experiment investigated the effect of climatic condition on the culture and production of freshwater prawn post larvae (PL 10; mean weight of 0.02 g) stocked in 400m² ponds. Results of the first experiment revealed that freshwater prawn raised during the dry season to summer (Oct 2004-Apr.2005) obtained higher growth rate (0.19 g and 0.15 g/day) and survival rate (34.27% and 24.49%) than that of summer to rainy season ($p<0.05$). The second experiment investigated the effect of two different stocking densities (25 and 50 individuals/m²) on the production survival of freshwater prawn. Results showed that the rate of growth, survival rate and production, were much higher at a stocking density of 25 individuals/m² ($p<0.05$) in contrast to 50 individuals/m². Growth performances of freshwater prawns were triggered by stocking density and season.

Substrates are used to increase the available surface area while culturing freshwater prawns (*Macrobrachium rosenmbergii*). This experiment determined which color, (black, blue, or white) affected growth and yield of freshwater prawn. Three treatments, each with additional vertical substrates (1.27 cm x 76 cm PVC pipe) were added to pens inside a pond at a density of vertical substrate/m². Freshwater prawns (50.0 g mean stocking weight) were stocked into each of three treatments with different colored PVC pipes in twelve 2.0 m² pens at 6 individuals m⁻² and cultured for 90 days. Production (2,166 kg ha⁻¹) and survival (55.40%) were significantly ($p<0.05$) improved in pens inside ponds with white PVC substrate versus 1,640 kg ha⁻¹ and

43.73% for blue 1,450 kg ha⁻¹, 36% for black or 942 kg ha⁻¹ and 25% for control, respectively. The feed conversion ratio (FCR) was lower in treatments provided with PVC substrate (black, blue, and white) than control (1.38 vs 2.52). Production size index was significantly different ($p < 0.05$) among treatments (white 129, blue 102, black 96.06 and control 51.06 g). These data indicate that prawn production increases in direct relation to the color of added substrate.

To increase growth and production of freshwater prawns, *Macrobrachium rosenbergii*, addition of artificial available surface was evaluated. The experiment evaluated the effects of no additional substrate versus additional artificial vertically oriented PVC pipe substrates (1.27 x 76 cm) added to pens inside a pond at a density of four vertical substrates m². Freshwater prawns (50.0 g mean stocking weight) were stocked into each of two trials in twelve 2.0 m² pens at 6 individuals m⁻² for a period of 90 days. Production (1750 vs 936 kg ha⁻¹) and survival rate (46 vs 26%) were significantly ($p < 0.05$) improved in pens provided with PVC substrate. Feed conversion ratio was significantly lower (1.38 vs 2.52) in the treatment with added substrate. Production size index was significantly ($p < 0.05$) higher in treatments with artificial substrate (105 vs 53 g). Specific growth rate was also higher (9.3 vs 3.2 g). However, in a second trial, there were no significant differences ($p > 0.05$) in production (942 vs 930 kg ha⁻¹) and survival rate (27.5% vs 25%) among treatments. Cutting of prawns claws did not improve the production and survival of freshwater prawns.

Keywords: Freshwater prawn, cutting of claws, Colors of substrate, PVC pipe, stocking density and culture season