Comparison of reproductive performance and offspring quality of giant freshwater prawn (Macrobrachium rosenbergii) broodstock from different regions

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Abstract: An experiment was conducted to compare the reproductive performance and offspring quality of Macrobrachium rosenbergii broodstock from four different sources: (1) Vietnam wild; (2) Vietnam pond-cultured; (3) Hawaii pond-cultured and (4) China pond-cultured M. rosenbergii females were individually followed for 180 days in three 1200-l fresh water recirculation systems and fed a commercial diet. Ovarian development, moulting and spawning events were checked daily. In addition a number of egg and larval quality parameters were determined. The breeding frequency, fecundity, egg laying success rate, egg dimensions and egg hatchability were not significantly different between animals from the four different sources. However, there were significant differences in terms of offspring quality between the different broodstock sources. Individual dry weight, larval development rate, time to reach the postlarval stage, postlarval survival and tolerance to ammonia toxicity were all better in the offspring originating from China pond-reared and Vietnam pond-reared broodstock sources compared to those originating from Vietnam wild and Hawaii pond-reared sources. Moreover, offspring quality from Chinese and Vietnamese pond-reared broodstock proved more stable in terms of ammonia tolerance over three consecutive reproduction cycles. In general, the pond-reared broodstock from China and from Vietnam resulted in better offspring quality than the Hawaii pond-reared and Vietnam wild broodstock. These results indicate that broodstock sourcing deserves proper attention in hatchery operations of M. rosenbergii. It furthermore proves that domesticated (pond-reared) animals are not necessarily inferior as breeders compared to wild-sourced animals. The results may also point out the potential to selectively breed stocks with improved characteristics adapted to the local culture environment. © 2009.

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