



UNIVERSITI PUTRA MALAYSIA

***EFFECT OF CLAY TURBIDITY ON THE GROWTH PERFORMANCE
OF
Macrobrachium rosenbergii (De Man, 1879)***

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**This project report is submitted in partial fulfillment of the requirement of the
degree of Bachelor of Agriculture (Aquaculture)**

DEPARTMENT OF AQUACULTURE

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ABSTRAK

Kajian ini telah dijalankan untuk mengetahui kesan kekeruhan tanah liat yang berbeza ke atas prestasi pertumbuhan *Macrobrachium rosenbergii*. Kajian telah ditamatkan dalam tempoh 3 minggu. Kekeruhan tanah liat yang berbeza telah digunakan, iaitu 0 (kawalan), diikuti dengan 200 (T1), 400 (T2) dan 800 mg/L (T3). Sebanyak 120 pasca larva telah dimasukkan ke dalam akuarium yang mengandungi 30 liter air untuk setiap rawatan. Setiap rawatan mempunyai empat replikasi. Analisis telah dilakukan dengan menggunakan ANOVA sehala diikuti oleh ujian julat ganda Duncan. Keputusan menunjukkan bahawa peningkatan dalam tahap kekeruhan tanah liat sehingga 800 mg/L tidak menjejaskan prestasi pertumbuhan pasca larva *M. rosenbergii*. Sehingga ke tahap ambang kekeruhan maksimum di mana pertumbuhan mula terjejas, kekeruhan boleh membantu meningkatkan kemandirian pasca larva yang hidup kerana ia berpotensi mengurangkan kanibalisme. Bagaimanapun, pasca larva yang berpenyakit akan mengurangkan kadar hidup dengan sangat ketara.

ABSTRACT

The study was conducted to find out the effect of different clay turbidities on the growth performance of *Macrobrachium rosenbergii* post-larvae. The study was completed in 3 weeks. The different clay turbidities used were 0 (control), 200 (T1), 400 (T2) and 800 mg/L (T3). A total of 120 post-larvae were stocked in each 30-liter aquarium for all the treatments. Each treatment had four replicates. Analysis was done using one-way ANOVA followed by Duncan multiple range test. Results showed that increase in clay turbidity level up to 800 mg/L did not affect the growth performance of *M. rosenbergii* post-larvae. Up to a maximum threshold level where growth would begin to be affected, turbidity could help to improve post-larvae survival since it could potentially reduce cannibalism. Diseased post-larvae however would result in severely reduced survival percentages.

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LIST OF ABBREVIATIONS AND SYMBOLS

ppt	Parts per thousand
ppm	Parts per million
mg/L	Milligram per liter
pH	Potential Hydrogen
°C	Degree Celsius
%	Percent
cm	Centimeter
L	Liter
FW	Fresh Water
FCR	Food Conversion Ratio
NTU	Nephelometric Turbidity Unit
SPSS	Statistical Package for The Social Sciences
SGR	Specific Growth Rate
UPM	Universiti Putra Malaysia
WMD	White Muscle Disease
PL	Post-Larvae
PVC	Polyvinyl chloride

CHAPTER 1

INTRODUCTION

Macrobrachium rosenbergii is also known as the Malaysian giant freshwater prawn. It is commercially cultured in Asian countries and considered a high value food source. *Macrobrachium rosenbergii* lives in brackish water during the larval development stage (Ling and Merican, 1961; Sandifer *et al.*, 1975). After metamorphosis into post-larvae, it migrates and lives totally in freshwater.

Macrobrachium rosenbergii is territorial and displays aggressive social behavior (Peebles, 1979). According to Alston (1991), cannibalism is a major problem in crustacean aquaculture and it is also a general phenomenon in freshwater prawn, especially during molting (Sandifer and Smith, 1985). Water quality parameters are very important in rearing *M. rosenbergii* because it will influence growth level. Dissolved oxygen, pH, temperature, salinity, ammonia and nitrite are considered as the most important water quality parameters. Some of the species of *Macrobrachium* are found in clean water while the others such as *M. rosenbergii* are found in extreme turbid condition (New, 2002).

To date, there is a lack of information and research on the effect of clay turbidity on the growth performance of *M. rosenbergii*. Whether clay turbidity can decrease cannibalism and reduce size variation in *M. rosenbergii* has practical and commercial implication during both nursery and grow-out stages. Therefore, this study was carried out to address the following objectives:

1. To determine the effect of clay turbidity on the growth performance of *M. rosenbergii* post-larvae.
2. To determine whether clay turbidity can decrease cannibalism among *M. rosenbergii* post-larvae.



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