

UNIVERSITI PUTRA MALAYSIA

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

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FP 2013 112

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

FACULTY OF AGRICULTURE

UNIVERSITI PUTRA MALAYSIA

SERDANG, SELANGOR

2013

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DEPARTMENT OF AQUACULTURE

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ACKNOWLEDGEMENT

Foremost, I would like to express my heartfelt gratitude to my supervisor, En. Abdullah Abd Rahim for his motivation, enthusiasm, patience and priceless advice. His guidance helped me a lot during the research and writing of this thesis. Without him, I think my research will not be able to be completed.

I would like to extend my appreciation to lab assistants Pn. Nur Shafika Maulad Abd. Jalil, En. Jasni Hj Md Yusoff and graduate student Nur Fatihah binti Abd Halid for giving lots of help during the experiment. Besides that, my gratitude goes to my friends, Kelvin Mun Leong Wai, Jasmine Lim Chiao Yen, Lim Yan Li, Ng Zeit Liang and Wong Kim Yan who encouraged me to carry out my research despite challenges.

Last but not least, I would like to thank my family especially my parents for supporting me spiritually throughout my life.

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. Bagaimanpun, 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

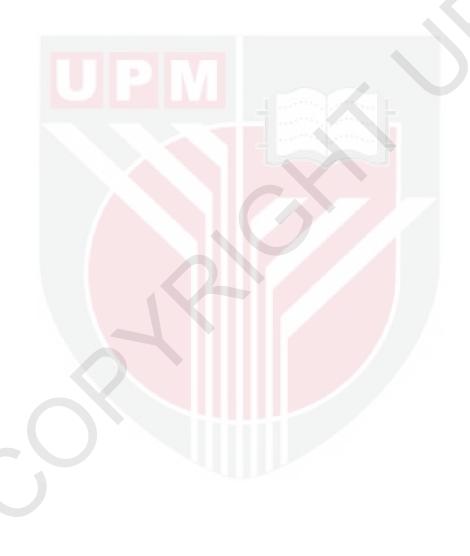
INTRODUCTION

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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