

THE EFFECTS OF TEMPERATURE AND SPINNING  
ON THE PROPERTIES OF POLYMER (Polypropylene trihydroxy)

TEMPERATURE AND MOISTURE EFFECTS

LP  
58  
FASM  
1  
2009

ANALYSIS OF POLYMERIZATION REACTION  
KINETICS AND MECHANISM

2009

1100076211

LP 58 FASM I 2009



1100076211

Dissolved oxygen depletion on survival and spawning  
performance of gourami (*Trichogaster trichopterus*) / Nurul  
Liyana Mohd Ramly.



PERPUSTAKAAN SULTANAH NUR ZAHIRAH  
UNIVERSITI MALAYSIA TERENGGANU (UMT)  
21030 KUALA TERENGGANU

1100076211

1100076211		

Lihat sebelah

**HAK MILIK**  
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

DISSOLVED OXYGEN DEPLETION ON SURVIVAL AND SPAWNING  
PERFORMANCE OF GOURAMI (*Trichogaster trichopterus*)

By  
Nurul Liyana Binti Mohd Ramly

Research Report submitted in partial fulfillment of  
the requirements for degree of  
Bachelor of Agrotechnology Science (Aquaculture)

Department of Fisheries and Aquaculture  
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU  
2009

This project report should be cited as:

Liyana, R. 2009. Dissolved oxygen depletion on survival and spawning performance of Gourami (*Trichogaster trichopterus*). Undergraduate thesis, Bachelor of Science Agrotechnology (Aquaculture), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu. 30p.

No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of pornographic recording, or may be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.



**FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN  
UNIVERSITI MALAYSIA TERENGGANU**

**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK ILMIAH I DAN II**

Adalah ini diakui dan disahkan bahawa laporan ilmiah bertajuk:

Dissolved Oxygen Depletion On Survival and Spawning Performance Of Gourami (*Trichogaster trichopterus*) oleh Nurul Liyana Binti Mohd Ramly, No.Matrik UK 14600 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Perikanan Dan Akuakultur sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Agroteknologi (Akuakultur), Fakulti Agroteknologi dan Sains Makanan, Universiti Malaysia Terengganu.

Disahkan oleh:

Penyelia Utama

Nama:

**LIEW HON JUNG**  
Lecturer

Cop Rasmi:

Institute Of Tropical Aquaculture,  
Universiti Malaysia Terengganu (UiTM),  
21030 Kuala Terengganu

Tarikh: 28 April 2009

Penyelia Kedua (jika ada)

Nama:

**DR. YEONG YIK SUNG**  
Lecturer

Cop Rasmi

Dept. of Fisheries and Aquaculture  
Faculty of Agrotechnology and Food Science  
Universiti Malaysia Terengganu  
21030 Kuala Terengganu.

Tarikh: 29/4/2009

## DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

Signature : ..... *Nurul* .....

Name : *NURUL LIYANA BINTI MOHD RAMLY* .....

Matric No : *4K14600* .....

Date : *4 MEI 2009* .....

## **ACKNOWLEDGEMENTS**

First of all, my special thanks go to my supervisor for this project, Mr Liew Hon Jung for his guidance, assistance and comments that enables this project to run smoothly as we planned. I would also like to thank my second supervisor for this project, Dr. Yeong Yik Sung who also providing me with valuable assistance and advice. A sincere thanks also goes to Dr. Nur Asma Binti Ariffin for her assistance, guidance and helpful information. My appreciation also goes to my beloved family especially my parents for their endless love and support that give me strength to complete this project as good as possible and also to all my beloved friends who help me a lot in this project. Without them, none of this would be possible. A lot of thanks to all staff at Marine Hatchery Complex and AKUATROP for their helps and cooperation along the project was conducted. Finally, thanks to all the individuals who have contributed to this project either directly or indirectly.

## ABSTRACT

Dissolved oxygen (DO) depletion commonly occurred in natural environment can cause a series of negative effects in aquatic organisms such as reducing the fish populations, reproduction performances and survival of many fish species. The study of dissolved oxygen depletion on survival and spawning performance of gourami (*Trichogaster trichopterus*) were conducted for 2 months at the Marine Hatchery Complex of Universiti Malaysia Terengganu. Fifteen pairs of broodstock were exposed to different dissolved oxygen concentration at 1 mg L<sup>-1</sup>, 3 mg L<sup>-1</sup>, 5 mg L<sup>-1</sup>, 7 mg L<sup>-1</sup> and 10 mg L<sup>-1</sup>. Hypoxic condition was achieved by introducing the nitrogen gas into the rearing water while high level of dissolved oxygen was achieved by introducing pure oxygen gas into the rearing water. Experimental tank of 1 mg L<sup>-1</sup>, 3 mg L<sup>-1</sup> and 10 mg L<sup>-1</sup> of dissolved oxygen were sealed in order to reduce gas diffusion. There is a significant correlation between dissolved oxygen concentration with survival, spawning performance as well as feed intake in fish. Fish reared in hypoxic condition showed most significant decreased in survival, spawning performance and feed intake while fish exposed in moderate dissolved oxygen concentration especially at 3 mg L<sup>-1</sup> and 5 mg L<sup>-1</sup> shows a significant increased in survival, spawning performance and feed intake.



## ABSTRAK

Pengurangan oksigen terlarut yang kebiasaanya berlaku di dalam persekitaran semulajadi boleh mengakibatkan satu siri kesan negatif kepada organisma akuatik seperti mengurangkan populasi ikan, pembiakan dan juga survival kebanyakan spesies ikan. Kajian mengenai pengurangan oksigen terlarut terhadap survival dan pembiakan ikan Sepat Siam (*Trichogaster trichopterus*) telah di jalankan selama 2 bulan di Kompleks Hatcheri Air Masin, Universiti Malaysia Terengganu. 15 pasang induk didedahkan kepada kepekatan oksigen terlarut yang berbeza iaitu  $1 \text{ mg L}^{-1}$ ,  $3 \text{ mg L}^{-1}$ ,  $5 \text{ mg L}^{-1}$ ,  $7 \text{ mg L}^{-1}$  dan  $10 \text{ mg L}^{-1}$ . Keadaan hypoxic diperolehi dengan menyalurkan gas nitrogen ke dalam air manakala oksigen terlarut yang tinggi diperolehi dengan menyalurkan gas oksigen tulen ke dalam air. Tangki eksperimen bagi rawatan  $1 \text{ mg L}^{-1}$ ,  $3 \text{ mg L}^{-1}$  dan  $10 \text{ mg L}^{-1}$  ditutup untuk mengurangkan penyebaran gas. Terdapat hubung kait di antara kepekatan oksigen terlarut dengan survival, pembiakan dan kadar pengambilan makanan ikan. Ikan yang dipelihara di dalam keadaan hypoxic menunjukkan penurunan yang paling ketara di dalam survival, pembiakan dan kadar pengambilan makanan manakala ikan yang didedahkan ke dalam kepekatan oksigen terlarut yang sederhana terutamanya pada  $3 \text{ mg L}^{-1}$  dan  $5 \text{ mg L}^{-1}$  menunjukkan peningkatan yang ketara di dalam survival, pembiakan dan kadar pengambilan makanan.