UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

THE HARVESTING OF RED TILAPIA BY USING LOGISTIC GROWTH MODEL

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Report submitted in partial fulfillment of the requirement
for the degree of
Bachelor of Science (Hons.) Mathematics
Center of Mathematics Studies
Faculty of Computer and Mathematical Sciences

JULY 2016

ACKNOWLEDGEMENTS

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

Alhamdulillah, we are grateful and all praises to Allah for giving us His blessing and strengths to complete this project successfully. Due to great teamwork,we managed to make use of all produced for this report.

We are deeply grateful and wish to express our heartiest gratitude to our supervisor, Madam Rahaidah Muhammad, for suggesting the points of the project,as well as the supervision of the work, enthusiasm and invaluable guidance. We are truly thankful for her tremendous efforts in helping us to make this project possible. It was a great honour to finish this project under her supervision.

In addition, we would also like to express our appreciation to our MSP660's lecturer, Madam Wan Khairiyah for her guidance and persistence in giving valuable contribution for us to complete this project. All of the information about template of the report, format, advice and guidance, have made our project a reality in a given time.

Last but not least,we like to thank our parents for their prayers as well as the support for driving us to move forward in this project. The motivation and moral support has given us strong determination in order to finish the project.

This project would not have been possible without the help of many people in so many ways. Finally, we would like to thank everyone that contributed in this project officially or unofficially.

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ABSTRACT

Tilapia is the common name for almost hundred species of cichlid fish from the tilapiine cichlid tribe. Tilapia is less commonly found living in brackish water but they are mainly freshwater fish inhabiting shallow streams, ponds, rivers and lakes. Red Tilapia or it's scientific name "Oreochromis Niloticus" is the second most farmed fish species in worldwide. It's broad tolerance to an array of environment becomes an important model for studies of fish physiology. A red tilapia started to appear in the aquaculture industry back in the mid-1980s. Red Tilapia has become a popular type of Tilapia in Malaysia. A canvas for reinvested earnings and lucrative returns are provided from the preferred fish and a favourite by breeders of freshwater fish ponds, animal in a cage and the system.

Consumer acceptance upon continued high demand come due to the ability of red tilapia to grow quickly as well as to multiply quickly, easier to manage and having less disease. Consequently, farming tilapia has given lots of benefits.

From all information we had, this project used Logistic Growth Model with no, constant and proportional harvesting to estimate the population of tilapia. This model is used to represent the population of tilapias with and without harvesting.

In this research, we are trying to compare the method of harvesting such that logistic growth model without harvesting, logistic growth model with constant harvesting, and logistic growth model with proportional harvesting. From the result, we can identify that the best method to harvest is by using logistic growth model with proportional harvesting.

1 INTRODUCTION

1.1 Introduction

Population can be defined as a summation of all the organisms of the same group or species, which live in a particular geographical area, and have the capability of interbreeding. In the context of human being populations, sinced 1999 the world populations of human reached 6 billion. According to Gilbert Geoffrey throughout his reference handbook "World Population" states that the total population continues to arise but the growth rate of world population has actually slowed in the past few decades. Population growth rate is commonly grows and decline but rarely stand still. Population increases when births outnumber deaths, and decrease when deaths outnumber births (Gilbert, 2001). The increasing and decreasing of population growth rate are caused by fertility and mortality. The concept of population growth rate of fish is same to human being. On others words, we try to study the population growth rate of tilapia fish.

Tilapias are second in weight harvested from culture ponds that leading by carp. Tilapias are natively found in Africa, Israel and Jordan.The most tilapia farming are produced in countries with tropical or subtropical climates. Americas have increased their tilapia farming with the growth of domestic markets and the export market in the United States. Its rapid growth and late age of sexual maturity are the reasons of Nile tilapia to become the most widely cultured in the world. In the early formation of red tilapia, they were inbred and weak thus poorly survived in the aquaculture environment. A lot of Red tilapias were found in the local aquarium trade whereas aquaculture industry is still at these inbred stage. The colour of some of red tilapias is not always red but there are also white, others deep orange. However, after a while, the popularity of red tilapia increased due to its attractive color, marketability and high salinity tolerance in some strains. Easy culture management and wide acceptability are the reasons of the red tilapia gaining fast popularity among local consumers.