CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME I

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IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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IIUM PRESS

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Suleyman Aremu Muyibi, Mohammed Saedi Jami & Zaki Zainudin: Current Reasearch and Development in Biotechnology Engineering at IIUM Volume I

ISBN: 978-967-418-150-5

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

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CHAPTER 3

WATER QUALITY CHARACTERIZATION STUDIES ON SPRING WATER FOR USE IN PONDS FOR *KELAH* FISH BREEDING IN *KELAH* SANCTUARY

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ABSTRACT

Kelah belongs to fresh water fish species and needs a very high quality of water to survive. Spring water is considered the most desirable source of supply as it is considered to be cleaner and much less likely to be contaminated by pathogens. This study aims to assess the quality of water used in breeding *kelah* fish at the *Kelah* Sanctuary as well as designs a system which will help to improve the water quality. Water sample collected at *Kelah* Sanctuary was characterized for pH, turbidity, alkalinity, chloride, ammonia, phosphorus, nitrate, nitrite, dissolved oxygen and water hardness. The result showed that the spring water has high concentration of alkalinity, hardness and pH while the pond water quality was very low when compared with the standard. Thus, pretreatment system which comprises of lime dosing, sedimentation, rock and sand filter was used to reduce the water quality of the spring water to acceptable level.

Keywords: *kelah*, water quality, pH, hardness, pretreatment system

INTRODUCTION

Kelah belongs to fresh water fish species and needs a very high quality of water to survive. The scientific name of *Kelah* is *Tor Tambroides*. The genus *Tor* (Gray) belongs to the family *Cyprinidae* (subfamily *Cyprininae.)* Environmental disasters (i.e. river pollutions, deforestation, watershed erosion, etc.) had led to the rapid destruction of their natural habitat. In addition, over fishing of these fishes has greatly reduced their population size. Thus, *Kelah* is facing an extinction threat especially in Malaysia. Their distributions are now limited to the upper streams and protected areas of Peninsular Malaysia and Borneo (Ping Anchorage, 2002). According to the data obtained from the KUSTEM (Azmi Ambak, 2006), water quality standards required for breeding of *Kelah* fish are parameters such as ammonia which should be less than 0.05mg/L, dissolved oxygen level must be more than 5 mg/L, nitrate level should be less than 5mg/L, pH of the water should range about 7-8, temperature about 25 ^{0}C, and