GROWTH AND SURVIVAL RATE OF *Rhizophora apiculata* AND *Rhizophora mucronata* PLANTED BY ENCASEMENT METHOD ON THE LAGOON-ESTUARY, UPMT

LAW SHIAN YEN

FACULTY OF APPLIED SCIENCE AND TECHNOLOGY
UNIVERSITI PUTRA MALAYSIA TERENGGANU
TERENGGANU
2000

Growth and survival rate of rhizophora apiculata and rhizophora mucronata planted by encasement method on the lagoon-estuary,upmt / Law Shian Yen.

Lihat sebelah

GROWTH AND SURVIVAL RATE OF *Rhizopora apiculata* AND *Rhizophora mucronata* PLANTED BY ENCASEMENT METHOD ON THE LAGOON-ESTUARY, UPMT

By

LAW SHIAN YEN

This project report is submitted in partial fulfillment of
the requirements for the Degree of
Bachelor of Marine Science

Faculty of Applied Science and Technology
UNIVERSITY PUTRA MALAYSIA TERENGGANU

2000

ACKNOWLEDGEMENT

This work is dedicated to my beloved father, to my mother and Edwin Chiew for their encouragement and support .

A special expression of gratitude is extend to my first Research Supervisor, Encik Sulong, second Research Supervisor, Dr Lokman Husain and to the other members of The Mangroves Research Unit (MARU), UPMT: Encik Razali Salam, Encik Raja, Encik Habir, Encik Harith, Kak Nora, Zainuddin and Mohd Tarmizi, for their helpfulness in succeeding the research and writing of this thesis.

Special thanks to my course mates, house mates and friends for their assistance in completing my research, especially to Mei Ling, Yew Seng and Kok Wei.

My heartfelt thanks for everything.

THANK YOU VERY MUCH !

ABSTRACT

Rehabilitation of mangrove forest has been carried out throughout the Asia Pacific region but the rate of success is small depending on the site conditions. In this study, Riley Encased Methodology was applied to rehabilitate of mangrove forest in the lagoon-estuary of UPMT. The study included determining the survival rate of *Rhizophora apiculata* and *Rhizophora mucronata* seedlings, the initial growth rate of *Rhizophora apiculata* and *Rhizophora mucronata* seedlings, seedling biomass and the root biomass. After 6 months the encased seedling has 67.86% of survival rate while the conventionally planted seedling had 11.75% survival rate. Survival rate of *Rhizophora apiculata* encased seedling is 60.71% and *Rhizophora mucronata* is 75.00%. *Rhizophora apiculata* encased seedling developed to an average height of 18.35 cm and *Rhizophora mucronata* grew to an average height of 14.78 cm. Number of leaves is proportional to height growth. Average number of leaves for *Rhizophora apiculata* encased seedling is 4.82 and *Rhizophora mucronata* encased seedling is 4.00. *Rhizophora apiculata* encased seedling biomass and roots biomass is 7.17g/annum and 5.27g/annum each; *Rhizophora mucronata* encased seedling biomass and roots biomass is 15.04g/annum and 8.05g/annum each. Riley Encasement Methodology protected the seeds from predators, sun schorching, flooding, high current and stagnant water effect.

ABSTRAK

Penanaman semula hutan paya bakau banyak dijalankan di kawasan Asia Pacific tetapi keberkesanannya amatlah kecil akibat daripada keadaan lokasi yang tidak sesuai. Dalam kajian ini, Riley Encasement Methodology digunakan dalam penanaman semula hutan bakau di UPMT. Kajian ini termasuklah penentuan kadar kemandirian bagi anak pokok *Rhizophora apiculata* dan *Rhizophora mucronata*, kadar pertumbuhan *Rhizophora apiculata* dan *Rhizophora mucronata*, biomass anak pokok dan biomass akar anak pokok. Setelah 6 bulan kajian dijalankan, ia menunjukkan bahawa anak pokok yang ditanam dalam PVC mempunyai kadar kemandirian sebanyak 67.86% dan kadar kemandirian bagi anak pokok tanpa PVC adalah sebanyak 11.75%. *Rhizophora apiculata* dan *Rhizophora mucronata* yang ditanam dalam PVC mempunyai kadar kemandirian sebanyak 60.71% dan 75.00% masing-masing. *Rhizophora apiculata* dalam PVC mempunyai pertumbuhan ketinggian sebanyak 18.35cm manakala *Rhizophora mucronata* adalah sebanyak 14.78cm. Pertambahan bilangan daun anak pokok adalah berkadar dengan ketinggiannya. Purata bilangan daun bagi *Rhizophora apiculara* dalam PVC adalah 4.82 dan *Rhizophora mucronata* adalah 4.00. Pertumbuhan biomass anak pokok *Rhizophora apiculata* dalam PVC dan biomass akarnya adalah sebanyak 7.17g/tahun dan 5.27g/tahun masing-masing. Pertumbuhan biomass anak pokok *Rhizophora mucronata* dalam PVC dan biomass akarnya adalah sebanyak 15.04g/tahun dan 8.05g/tahun masing-masing. Riley Encasement Methodology ini dapat melindungi anak pokok daripada pemangsa, pancaran cahaya matahari, kesan banjir, arus yang deras dan keadaan air yang tidak bergerak.