

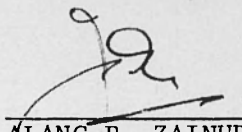
LEAST - COST FORMULATION OF FEEDS
FOR PRAWNS, WITH PARTICULAR REFERENCE TO
Macrobrachium rosenbergii (DE MAN)

POH YONG THONG

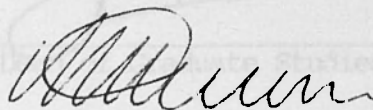
MASTER OF SCIENCE
UNIVERSITI PERTANIAN MALAYSIA

1985

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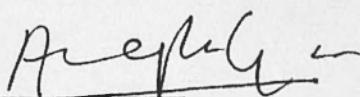
ALANG P. ZAINUDDIN, Ph.D.
Assoc. Professor/Dean of Graduate Studies
Universiti Pertanian Malaysia
(Chairman Board of Examiners)



ALBERT G.J. TACON, Ph.D.
Fish Feed Technologist
Food and Agriculture Organization of the
United Nations, Rome
ITALY
(External Examiner)



CHAN HOOI HAR, Ph.D.
Lecturer
Faculty of Fisheries and Marine Science
Universiti Pertanian Malaysia
(Internal Examiner)

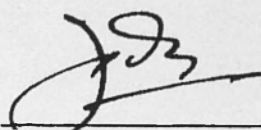


ANG KOK JEE, Ph.D.
Associate Professor
Faculty of Fisheries and Marine Science
Universiti Pertanian Malaysia
(Internal Examiner/Supervisor)

This thesis was submitted to the Senate of Universiti
Pertanian Malaysia and was accepted as partial fulfilment of
the requirements for the degree of Master of Science.

MAKTAHACHUM ROSBERGII (DE WNI)

Date: 4th July, 1985



Dean of Graduate Studies

by

Tan Yeng Hong

A thesis submitted in partial fulfilment of the degree of
Master of Science in the Faculty of Fisheries and Marine
Science, Universiti Pertanian Malaysia.

July 1985

1000401633

LEAST-COST FORMULATION OF FEEDS
FOR PRAWNS, WITH PARTICULAR REFERENCE TO
MACROBRACHIUM ROSENBERGII (DE MAN)

Dedicated to the memory of my father, who passed away
while this project was being undertaken.

by
Poh Yong Thong

..... and he was like a dandelion, that broadcasted its
seeds in fertile valley - his efforts shall never be
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DEDICATION

ACKNOWLEDGEMENT

The author wishes to express his appreciation to his supervisor, Dr. Ang Kok Joo and co-supervisor, Dr. Lay Ah Theng for their guidance, encouragement and invaluable mentorship. Sincere appreciation is also extended to Enik Che Ross bin Saad for teaching him the rudiments of fish nutrition; to Mr. Cheah Sin Hock for invaluable discussions and encouragement; to the Dean of the Faculty of Food Science and Technology for use of the Technicon TSM Amino Acid Analyser; to Mr. Chan Tin Wan for technical assistance on amino acid analysis; to Mr. Lim Song Rok, Mr. S. Patinésothy, Mr. Chong Kah Tin, Mr. Kenneth Chin and Mr. Rabir Ahmed for assistance in one way or another. A special word of thanks is also extended to Dr. Chan Booi Har, for her constructive criticism. Without her encouragement and help, this thesis may not have been possible.

This project was supported by a Research Grant No. 1813-1-005 from Universiti Pertanian Malaysia, a part-time research assistantship from IIRG and the Sarawak Tunku Abdul and he was like a dandelion, that broadcasted its seeds in fertile valley - his efforts shall never be forgotten.

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This project was supported by a Research Grant No. 1813-1-065 from Universiti Pertanian Malaysia, a part-time research assistantship from IDRC and the Sarawak Tunku Abdul Rahman Scholarship. The financial support of the sponsors are gratefully acknowledged.

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Linear Programming 22

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An abstract of the thesis presented to the Senate of Universiti Pertanian Malaysia in partial fulfilment of the requirements for the Degree of Master of Science.

LEAST-COST FORMULATION OF FEEDS FOR PRAWNS, WITH PARTICULAR REFERENCE TO MACROBRACHIUM ROSENBERGII (DE MAN)

by

Poh Yong Thong

July 1985

Supervisor : Ang Kok Jee, Ph.D.

Co-Supervisor : Law Ah Theem, Ph.D.

Faculty : Fisheries and Marine Science

Linear programming was used in least-cost formulation of feeds for Macrobrachium rosenbergii. The constraints were: crude fat of 5 to 10%, gross energy of 4,400 cal/g, an amino acid profile similar to that of the prawn and specified amounts of crude protein of either 25%, 30%, 40% or 50%. Four pellets, P.25, P.30, P.40, and P.50, were formulated, costing M\$0.72, M\$0.75, M\$0.81 and M\$1.04 per kilogram respectively. Chemical analyses indicated that the crude protein, crude fat and gross energy content of the formulated feeds agreed closely with the given constraints. Amino acid analyses showed that the amino acid profiles (with the exception of tryosine, leucine and lysine) of the formulated feeds were remarkably similar to the amino acid profile of the prawn.

Three culture systems were designed to maintain optimal physico-chemical conditions for testing the responses of the prawn to the pellets. P.40 was shown to produce a higher growth rate of 1.15 cm per month for postlarval M. rosenbergii (0.96 - 3.08 cm post-orbital length) and 1.02 cm per month for juvenile M. rosenbergii (2.67 - 4.64 cm post-orbital length). The results indicated that the optimum protein level of the diet formulated by linear programming for best growth was 40%.

Juli 1985

Penyelia : Ang Kok Jee, Ph.D.

Penyelia Bersama : Law Ah Theen, Ph.D.

Fakulti : Peternakan dan Sains Samudera

Programan linear digunakan untuk formulasi makanan bagi Macrobrachium rosenbergii. Konstrainnya adalah: 5% lemak, 10% lemak mentah, tenaga kasar 4,400 cal/g, profil asid amino adalah sama dengan profil asid amino udang dan peratus protein mentah yang tertentu, iaitu 25%, 30%, 40% atau 50%. Empat pelet P.25, P.30, P.40 dan P.50 diformulasikan, dengan harga M\$0.72, M\$0.75, M\$0.81 dan M\$1.04 se kilogram masing-masing. Analisa kimia menunjukkan bahawa protein mentah, lemak mentah dan tenaga kasar bagi makanan yang diformulasikan beraturan rapat dengan konstrain yang ditentukan. Analisa asid amino menunjukkan bahawa profil asid amino (kecuali tirosin, leusin dan histin) bagi makanan yang diformulasikan adalah menyamai profil asid amino udang.