

**ESTIMATION OF LONGAN YIELD USING
BAYESIAN BELIEF NETWORK
MODELING IN PHRAO DISTRICT,
CHIANG MAI PROVINCE**



VORRAVEERUKORN VEERACHITT

DOCTOR OF PHILOSOPHY

IN AGRICULTURAL SYSTEMS

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

JULY 2014

**ESTIMATION OF LONGAN YIELD USING BAYESIAN BELIEF
NETWORK MODELING IN PHRAO DISTRICT,
CHIANG MAI PROVINCE**

VORRAVEERUKORN VEERACHITT

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN AGRICULTURAL SYSTEMS**

ลิขสิทธิ์ © by Chiang Mai University
All rights reserved

GRADUATE SCHOOL, CHIANG MAI UNIVERSITY

JULY 2014

**ESTIMATION OF LONGAN YIELD USING BAYESIAN BELIEF
NETWORK MODELING IN PHRAO DISTRICT,
CHIANG MAI PROVINCE**

VORRAVEERUKORN VEERACHITT

THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN AGRICULTURAL SYSTEMS

Examination Committee:

Advisory Committee:

T. Jaroenkit
.....Chairman
(Asst.Prof.Dr.Theeranuch Jaroenkit)

Ch S
.....Advisor
(Asst. Prof. Dr. Chanchai Sangchyoswat)

Ch S
.....Member
(Asst. Prof. Dr. Chanchai Sangchyoswat)

B. Ekasingh
.....Co-advisor
(Assoc. Prof. Dr. Benchaphun Ekasingh)

B. Ekasingh
..... Member
(Assoc. Prof. Dr. Benchaphun Ekasingh)

Attacha J
..... Co-advisor
(Assoc. Prof. Dr. Attachai Jintrawet)

Attacha J
..... Member
(Assoc. Prof Dr. Attachai Jintrawet)

T. Onraphai
..... Member
(Asst. Prof. Dr. Thaworn Onraphai)

7 July 2014

Copyright © by Chiang Mai University

ACKNOWLEDGMENT

I would like to express my deepest appreciation to my advisor, Asst. Prof. Dr. Chanchai Sangchyoswat, for his extraordinary advice, counseling and guidance, as well as correction until this dissertation was completed. Without his support this dissertation would not have been possible.

I would like to thank Asst. Prof. Dr. Theeranuch Jaroenkit, Director of Maejo Longan Research and Development Center, Maejo University, for her kind acceptance to be the chairperson in my dissertation examination.

I would like to offer my profound gratitude and deep regard to my committee members, Assoc. Prof. Dr. Benchaphun Ekasingh for her valuable comments concerning social context and Assoc. Prof. Dr. Attachai Jintrawet, who has taught me substantial knowledge and support me in many ways.

I am very much indebted to Asst. Prof. Dr. Thaworn Onpraphai for his helpful guidance on image processing.

I also find it difficult to find words to express my gratitude to Dr. Methi Ekasingh, who has the attitude and the substance of a genius. He has inspired me to do this thesis. He is my teacher and teaches me a lot of knowledge for long time. I feel indebted to him more than he knows.

Tremendous thanks go to the Thailand Research Fund (TRF) for providing financial support for me to carry out some part of this research through grant number RDG53Q0005, to all longan farmers in Phrao District for their kind cooperation and support in my data and information collection, and to the Center for Agricultural Resource System Research under the Faculty of Agriculture at Chiang Mai University for generous support in terms of research facilities.

Finally, I would like to express my deepest gratitude and love to my parents, my father Mr. Thavorn Veerachitt, my mother Mrs. Vijitra Veerachitt, my two older sisters, Miss. Ajcharavorn Veerachitt, Miss. Vorrachitt Veerachitt for their unconditional

support in giving me the extra strength and motivation to get things done. This thesis is dedicated to them.

Last but not least, I would like to thank all of my friends who gave me encouragement, patience, and sacrifice, which are source of inspiration and motivation to complete my thesis. Any errors and short-comings remain of course mine alone.

Vorraveerukorn Veerachitt



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved