

**PREDICTION OF 2-ACETYL-1-PYRROLINE CONTENT
IN RICE (*Oryza sativa indica* cv. Pathum Thani 1) GRAINS
BASED ON GROWING CONDITION, PLANT
GROWTH AND YIELD COMPONENT DATA
USING CHEMOMETRIC TECHNIQUES**



MASTER OF SCIENCE

IN CHEMISTRY

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

AUGUST 2016

**PREDICTION OF 2-ACETYL-1-PYRROLINE CONTENT
IN RICE (*Oryza sativa indica* cv. Pathum Thani 1) GRAINS
BASED ON GROWING CONDITION, PLANT GROWTH
AND YIELD COMPONENT DATA USING
CHEMOMETRIC TECHNIQUES**



SUJITRA FUNSUEB

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN CHEMISTRY**

**GRADUATE SCHOOL, CHIANG MAI UNIVERSITY
AUGUST 2016**


**PREDICTION OF 2-ACETYL-1-PYRROLINE CONTENT IN RICE
(*Oryza sativa indica* cv. Pathum Thani 1) GRAINS BASED ON
GROWING CONDITION, PLANT GROWTH AND
YIELD COMPONENT DATA USING
CHEMOMETRIC TECHNIQUES**


SUJITRA FUNSUEB

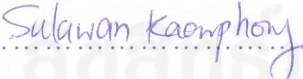
THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN CHEMISTRY

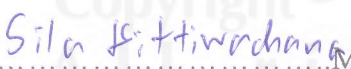
Examination Committee:

Advisor:


.....Chairman
(Dr. Wipanoot Baison)


.....
(Asst. Prof. Dr. Sila Kittiwachana)


.....Member
(Asst. Prof. Dr. Sulawan Kaowphong)


.....Member
(Asst. Prof. Dr. Sila Kittiwachana)

5 August 2016

Copyright © by Chiang Mai University

ACKNOWLEDGEMENT

This research would not have been possible without the contribution and assistance of everyone. First of all, I would like to express my deep appreciation particularly to Asst. Prof. Dr. Sila Kittiwachana, my advisor, for his endless support, patience, advice as well as inspiration.

I am grateful for Dr. Wipanoot Baison and Asst. Prof. Dr. Sulawan Kaowphong for thesis consideration and all their useful discussion and suggestions.

More importantly, I would like to give special thanks to Ms. Grissana Sudtasarn from Ubon Ratchathani rice research center for the determination of 2-acetyl-1-pyrroline in rice grains.

In addition, I could not have accomplished this thesis without all the help from my laboratory group, especially Ms. Chanida Krongchai and Ms. Sakulna Wongsaipan. We worked in the field together, and they provided the results of response surface methodology and gave me many great ideas.

I would also like to show my gratitude to my parents and relatives for their great encouragement and to my best friend Ms. Jeeranan Nonkumwong for the assistance and motivation.

Finally, I most gratefully acknowledge the Development and Promotion of Science and Technology Talents Project (DPST) including Chiang Mai University and Graduate school for financial support for my undergraduate and postgraduate studies.

Sujitra Funsueb