

**DETERMINATION AND DESORPTION OF CYPERMETHRIN  
AND FENVALERATE INSECTICIDE RESIDUES  
FROM CABBAGE**



**RUNGRUDEE SRISOMANG**

**MASTER OF SCIENCE**

**IN CHEMISTRY**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved

**THE GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY**

**SEPTEMBER 2007**

**DETERMINATION AND DESORPTION OF CYPERMETHRIN AND  
FENVALERATE INSECTICIDE RESIDUES  
FROM CABBAGE**

**RUNGRUDEE SRISOMANG**

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF SCIENCE  
IN CHEMISTRY**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
Copyright© by Chiang Mai University  
All rights reserved

**THE GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY  
SEPTEMBER 2007**

**DETERMINATION AND DESORPTION OF CYPERMETHRIN  
AND FENVALERATE INSECTICIDE RESIDUES  
FROM CABBAGE**

RUNGRUDEE SRISOMANG

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

EXAMINING COMMITTEE

*Natdhapat Longani*

CHAIRPERSON

Asst. Prof. Natdhapat Longani

*O. Arquero*

MEMBER

Asst. Prof. Dr. Orn-anong Arquero

*Udom Sriyotha*

MEMBER

Assoc. Prof. Dr. Udom Sriyotha

25 September 2007

© Copyright by Chiang Mai University

## ACKNOWLEDGEMENTS

I would like to express my heartfelt gratitude and appreciation to Assistant Professor Dr. Orn-anong Arquero, my adviser for her , invaluable guidance and constant inspiration throughout the course of this research work. I am also grateful to Assistant Professor Natdapat Longani and Associate Professor Dr. Udom Sriyotha for their valuable comments and suggestions on this research work.

I am very grateful to the technical staff of the Chemistry Department's central instrument room, especially Mr. Pisan Kitsawatpaiboon and Ms. Wanwarang Pattanapo, and also their admirable technical services throughout this research work are sincerely acknowledged .

Special thanks are also due to the Postharvest Technology Institute, Chiang Mai University, Center for Innovation in Chemistry, Postgraduate Education and Research Program in Chemistry (PERCH-CIC) for the graduate scholarships, which relieved the author's financial burden and made it possible for me to complete this research.

Thanks are also due to all of my friends and graduate students in the Department of Chemistry, Faculty of Science, Chiang Mai University, for their useful help and understanding throughout this work.

Finally, I am profoundly grateful to my parents and my brother for their tender love, care and endless encouragement, which enable me to carry out this research work successfully.

Rungrudee Srisomang