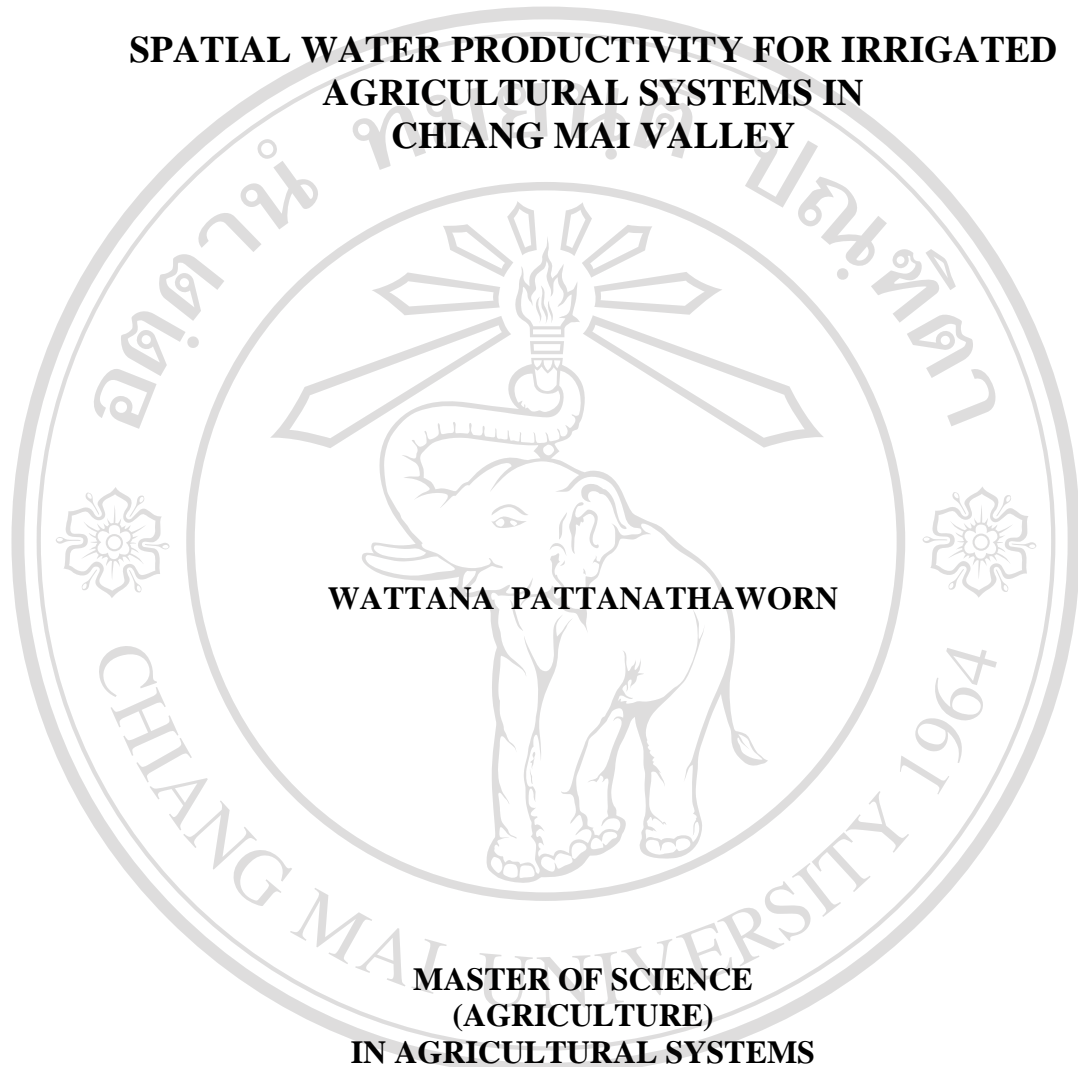


**SPATIAL WATER PRODUCTIVITY FOR IRRIGATED
AGRICULTURAL SYSTEMS IN
CHIANG MAI VALLEY**



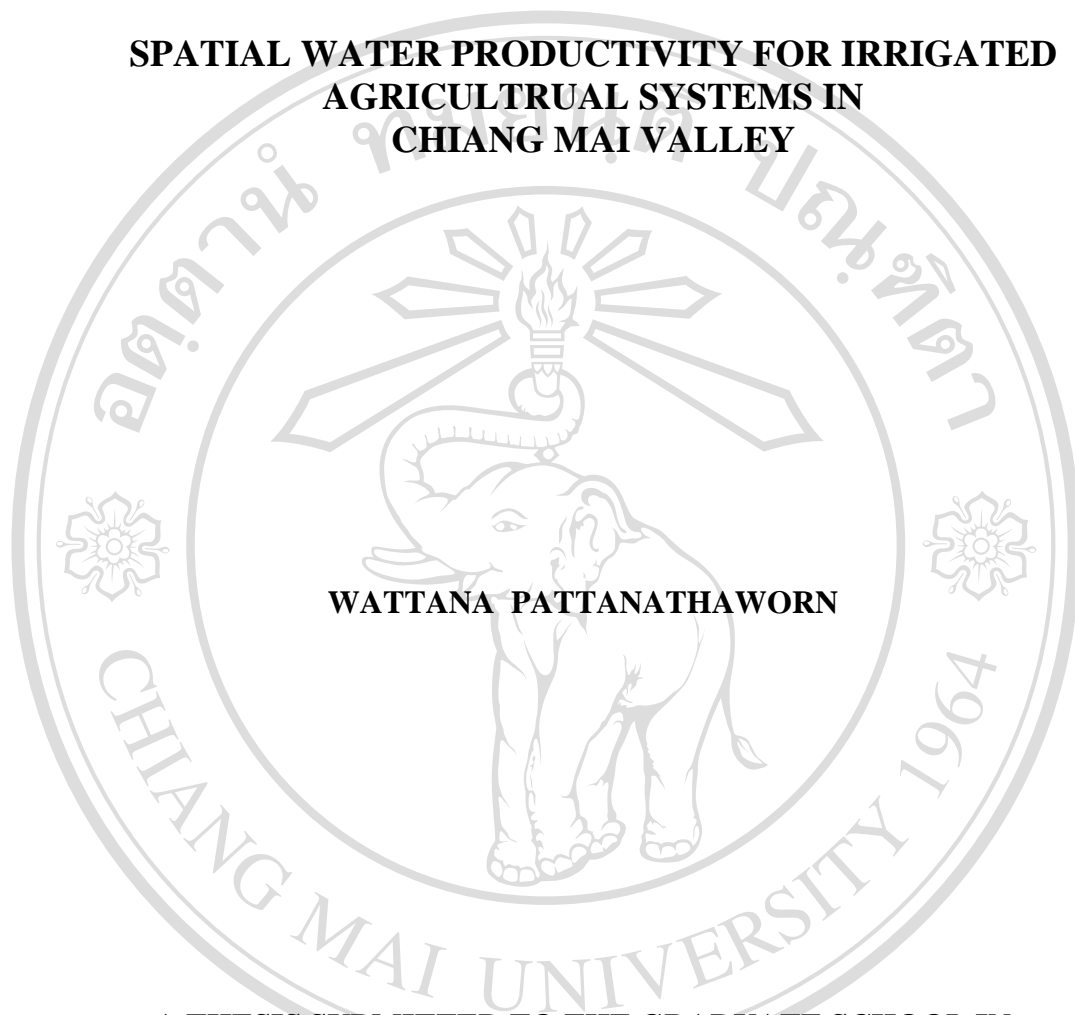
WATTANA PATTANATHAWORN

**MASTER OF SCIENCE
(AGRICULTURE)
IN AGRICULTURAL SYSTEMS**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
JULY 2008**

**SPATIAL WATER PRODUCTIVITY FOR IRRIGATED
AGRICULTURAL SYSTEMS IN
CHIANG MAI VALLEY**



WATTANA PATTANATHAWORN

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
(AGRICULTURE)
IN AGRICULTURAL SYSTEMS**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
JULY 2008**

SPATIAL WATER PRODUCTIVITY FOR IRRIGATED
AGRICULTURAL SYSTEMS IN
CHIANG MAI VALLEY

WATTANA PATTANATHAWORN

THIS THESIS HAS BEEN APPROVED
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE (AGRICULTURE)
IN AGRICULTURAL SYSTEMS

EXAMINING COMMITTEE

M. Ekasingh
.....
Lect. Dr. Methi Ekasingh

CHAIRPERSON

B. Ekasingh
.....
Assoc. Prof. Dr. Benchaphun Ekasingh

MEMBER

Ch
.....
Asst. Prof. Dr. Chanchai Sangchyoswat

MEMBER

Phrek Gypmantasiri
.....
Mr. Phrek Gypmantasiri

MEMBER

16 July 2008

© Copyright by Chiang Mai University

ACKNOWLEDGEMENT

I would like to express my sincere appreciation to all staff members of the Multiple Cropping Center (MCC) for helping me in every aspects since I enrolled in the Agricultural Systems program until the thesis is complete.

This dissertation cannot be finalized without an advice and encouragement from Lect. Dr. Methi Ekasingh, my thesis advisor and valuable suggestion from Assoc. Prof. Dr. Benchaphun Ekasingh and Asst. Prof. Dr. Chanchai Sangchyoswat, my thesis committee. I would like to thank Mr. Phrek Gypmantasiri, the external examiner for his helpful comments.

I would like to thank Dr. Ard Somrang, Director of Land Development Department (LDD) between 2002 to 2005, Mr. Kriangsak Hongto, Deputy Director of LDD, and Mr. Rangaridh Boonsin, Director of Information Center to allow me to study in this program so that I will be competent in developing spatial databases and application software for future uses in LDD.

I would also like to express my special thank to the Rockefeller Foundation for the financial support during my study in Agricultural Systems program. My appreciation also extend to Thailand Research Fund for supporting research on irrigation geodatabase and water productivity of irrigation systems as one part of the Decision Support System for Agricultural Resource Management and Services Project.

I would like to thank Miss Woraluck Suteerawantana who always help me during my study in AGS program. I would also like to thank MCC GIS Lab staff; Miss Petch, Mr. Tong, Mr. M, Miss Oh, Miss O, and Miss Mam including all AGS friends especially Mrs. Kumudu for their warm friendships and supports.

Wattana Pattanathaworn