THESIS

STUDIES ON ENHANCING THE EFFECTS OF ARBUSCULAR MYCORRHIZAL FUNGI ON MAIZE UNDER FIELD CONDITIONS

ROONGROJ PITAKDANTHAM

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Soils) Graduate School, Kasetsart University 2007

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to my advisor, Emeritus Professor Amnat Suwanarit, for his advice and guidance throughout the study. I am grateful to the following committee members for valuable suggestions and criticisms on this study: Dr. Omsub Nopamornbodi, Associate Professor Ed Sarobol and Assistant Professor Arinthip Thamchaipenet. The indebtedness and sincere appreciation are extended to Associate Professor Sumitra Poovarodom for kind defense examination.

I am thankful to the Thailand Research Fund, the Royal Golden Jubilee Ph.D. program for financial supporting this study; Kasetsart University Research Fund, the Embassy of France and the European Commission for financial supporting to some experiments. I would like to express my sincere thanks to Assistant Professor Poonpilai Suwanarit and Dr.Amornrat Promboon for very kind guidance; Dr. Chokechai Aekatasanawan, Dr. Sansern Jumpatong and Mr. Jarong Rungchuang for providing maize seeds and soil and giving comments; Ms.Supaporn Thamsurakul for permission to use the laboratory at Department of Agriculture; Mr.Yongyuth Phaikaew for suggestion on statistical analysis; Dr.Corinne Leyval, Dr.Erik Joner, Dr.Philippe Vandenkoornyuse and Carole Tonin for assistance on pure pot culture and PCR-RFLP technique. I would like to thank colleagues from Kasetsart University, Crop Integration Business Group (C.P.) for their encouragement; Miss. Supaporn Saothongnoi for help in greenhouse work; Department of Microbiology, Faculty of Science and KAPI, Kasetsart University for permission to use the cold rooms.

Finally, I wish to express my deep sense of gratitude to my parents, wife and brother, for their encouragement during this study.

Roongroj Pitakdantham May, 2007