

## ACKNOWLEDGEMENTS

I would like to express my sincere appreciation and gratitude to my advisor, Assoc. Prof. Dr. Amnat Chidthaisong, for his supervision, helpful discussions, and attention throughout the study. I am also deeply grateful to my committee members, Prof. Dr. Monique Y. Leclerc, Dr. Andrew M.S. McMillan, Dr. Pitayakorn Limtong, and Mr. Jean-Luc Maeght for their constructive comments and suggestions in this study. In particular, Mr. Maeght taught me instrument setup for monitoring root activity in soil profiles. I express special thanks to Prof. Dr. Inubushi Kazuyuki, who served as the microbial biomass laboratory in Chiba University, Japan and external examiner, for his valuable comments. In particular, I especially want to recognize the assistance and hospitality of Prof. Dr. Monique Y. Leclerc and her staff at University of Georgia, USA, who provided me great care and good relationships over the 7 months I was stationed there.

I also wish to thank King Mongkut's University of Technology Thonburi, Ratchaburi Campus, in Ban Ranbua, Tambon Rangbua, Chombung District, Ratchaburi Province, for facilitating and providing access to study plots. In addition, this research project was supported by funding assistance provided by the Joint Graduate School of Energy and Environment (JGSEE), King Mongkut's University of Technology Thonburi (KMUTT) under the grant in aid from the Energy Policy and Planning Office (EPPO) and partly supported by funding from the Thailand Research Fund (TRF) through the Royal Golden Jubilee RGJ-Ph.D.

Last but not least, I would like to express my deep gratitude to my family for their support and warmth. They have always let me choose my own way and encouraged me. Without their great care, I could never have accomplished this study.