

Teerapong Kasetsomboon 2012: Sequence Variation of Avirulence Genes of Rice Blast Fungus, *Magnaporthe oryzae* in Thailand. Master of Science (Genetic Engineering),
Major Field: Genetic Engineering, Interdisciplinary Graduate Program.
Thesis Advisor: Assistant Professor Chatchawan Jantasuriyarat, Ph.D. 134 pages.

The interaction between rice, *Oryza sativa*, and rice blast fungus, *Magnaporthe oryzae*, is triggered by an interaction between the protein products of the host resistant gene, and the pathogen avirulence gene. This interaction follows the idea of 'gene-for-gene concept'. The resistant gene has been effectively protecting rice plant from rice blast infection. However, the resistant genes usually break down several years after the release of the resistant rice varieties because the fungus has evolved to new races. The objective of this study is to investigate the nucleotide sequence variation of the *AVR-Pita1*, *AVR-Pik* and *AVR-Pii* gene that influences the adaption of rice blast fungus to overcome the resistant gene. Seventy eight rice blast fungus isolates were collected in 2549 and 2553 from infected rice plants in northern and northeastern Thailand. The nucleotide sequences of avirulence genes were amplified and analyzed using DnaSP 5. Phylogenetic analysis was conducted with MEGA 5.0 program. The results of this study revealed that the different level of nucleotide sequence polymorphisms and the genetic selection pressure in each *AVR*-gene in rice blast isolates. The details of sequence variation analysis were described in this article. The information from this study can be used for rice blast resistant breeding program in the future.

Student's signature

Thesis Advisor's signature