

Jiraphan Sopee 2012: Population Biology of *Phytophthora infestans* in Northern Thailand. Doctor of Philosophy (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Somsiri Sangchote, Ph.D. 220 pages.

One hundred thirty-two isolates of *Phytophthora infestans* were isolated from infected potato leaflets collecting in the northern Thailand, Chiang Mai and Tak provinces, during 2006-2009 used to study their population biology. These isolates were analyzed for morphology, pathogenicity, sensitivities to metalaxyl fungicide, mating type, mitochondrial DNA haplotype, and variation of three nuclear gene regions (RAS, Intron RAS, and B-Tubulin) and RAPD fingerprinting.

All isolates were studied on their growth and development on modified media using plant ingredients available in Thailand compared with V8 and rye A agar. It showed that black sesame, black bean, and red kidney bean could be as based media for culture and long term storage. Colonial characters of these isolates on rye A agar were cottony (26% of the isolates), powdery (52%), and concentric ring (22%) type. On potato tuber slices, 64% of the isolates were mycelial and 36% sporangial type. The sizes of sporangia and oospores were varied within the population. Pathogenicity test of these isolates on potato leaflets cv. Atlantic and Spunta revealed that 73 and 54% of the isolates produced large lesions, respectively. A selected aggressive Thai isolate could cause disease on the other hosts including petunia, eggplant, and chilli leaves. One hundred twenty isolates were intermediate and 12 isolates were sensitive to metalaxyl. All of these isolates were A1 mating type and mitochondrial haplotype IIa. No variation was observed for DNA gene sequences among isolates. Polymorphism was identified by 17 RAPD primers. A total of 86 bands were amplified by RAPDs, with the similarity coefficient ranging between 0.54 and 0.97.

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Student's signature

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Thesis Advisor's signature