

Tidawan Chomdate 2013: Identification and Pathogenicity Test of

*Ralstonia solanacearum* Isolated from Cassumunar (*Zingiber montanum*).

Master of Science (Agriculture), Major Field: Plant Pathology, Department of

Plant Pathology. Thesis Advisor: Assistant Professor Chalida Leksomboon, Ph.D.

51 pages.

Nine isolates of *Ralstonia solanacearum* from cassumunar (*Zingiber montanum*) were compared with respect to result of biovar test, hypersensitivity in tobacco and pathogenicity to five host plants. Based on Hayward's classification scheme, 7 isolates were placed in biovar 3 and 2 in biovar 4. All isolates caused a typical hypersensitivity in tobacco leaves 36-48 h. Based on host range, all isolates were placed in race 4. The nine isolates were further identified by polymerase chain reaction (PCR) technique using primer 759 and 760 to amplify a unique DNA fragment of 281 bp from *R. solanacearum*. Furthermore, two PCR primer sets (21F-21R and AKIF-AKIR) were used to amplify a unique DNA fragment of 125 and 165 bp from *R. solanacearum* race 4. The 21F-21R did not amplify the bands from genomic DNA of *R. solanacearum* from cassumunar and the other isolates from ginger, boesenbergia, tomato and chili. Whereas, the AKIF-AKIR primer set amplified a single band (165 bp) from genomic DNA obtained from three isolated of cassumunar (C5/1, C9/1 and C13/1) and the other isolates from ginger and boesenbergia. These 165 bp fragments from 3 isolates of cassumunar, ginger isolates and boesenbergia isolates were sequenced and determined their similarity. It was found that the five isolates showed 100% homology with each other.

The pathogenicity of *R. solanacearum* isolated from cassumunar was evaluated on eight species of economic plants. The plants were grown in the greenhouse and inoculated by root-injury technique. The results showed that all isolates were highly virulent on edible ginger (*Zingiber officinale*). Most isolates were pathogenic to boesenbergia (*Boesenbergia pandurata*), but C6/1 and C11/1 were not. Three isolates, C7/1, C8/2 and C13/1 were slightly virulent on galangal (*Alpinia galanga*). In turmeric (*Curcuma domestica*), tomato (*Lycopersicon esculentum*), chili (*Capsicum annum*), groundnut (*Arachis hypogaea*) and para rubber (*Hevea brasiliensis*) no systemic symptoms appeared.

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Thesis Advisor's signature