

Channarong Seepiban 2011: Characterization of Tomato necrotic ringspot virus, a New Species of Tospovirus Infecting Tomato in Thailand. Doctor of Philosophy (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Supat Attathom, Ph.D. 120 pages.

Tospoviruses cause severe damages on various economically important crops in Thailand such as tomato, pepper, peanut, watermelon, cantaloupe, cucumber and loofah. In this study, a new tospovirus isolated from naturally infected tomato plants grown in Nakhon Pathom province was characterized on the basis of particle morphology, serology, host range, nucleotide sequence of S and M RNA segments and thrips transmission. Infected tomato plants showed typical tospovirus symptoms consisting of necrotic spots, necrotic ringspots and stem necrosis. This virus was detected by using general antibodies that could recognize *Watermelon silver mottle virus* (WSMoV), *Capsicum chlorosis virus* (CaCV) and *Melon yellow spot virus* (MYSV). However, it did not react with specific monoclonal antibodies (MAbs) to WSMoV and CaCV or a specific MAb to MYSV. The complete nucleotide sequences of S and M RNAs of the virus were determined. They were 3,023 and 4,716 nucleotides in length, respectively, and contained two ORFs in an ambisense arrangement. Sequence analysis indicated that amino acid sequence of the nucleocapsid (N) protein shared 58.2%, 56.0% and 51.8% identity with those of CaCV, WSMoV and MYSV, respectively. The virus was experimentally transmitted by *Thrips palmi* and *Ceratothripoides claratris* with an efficiency of 83% and 12%, respectively. Based on our results, we conclude that this tospovirus isolate should be considered a member of a new species. The name Tomato necrotic ringspot virus (TNRV) is proposed for this tospovirus. Moreover, TNRV was also compared with *Capsicum chlorosis virus* (CaCV), an established member of tospovirus previously isolated from peanut. Results confirmed that TNRV and CaCV are different species of tospovirus and various isolates of CaCV could exist.

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