

Unyarat Ritpitakphong 2010: Evaluation of Transgenic Tomato for *Cucumber mosaic virus* Resistance. Master of Science (Agricultural), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Supat Attathom, Ph.D. 92 pages.

Five lines of transgenic tomato namely L-1, L-6-3, L-13, L-25 and L-29-3 were obtained by genetic transformation of Seedathip 3 tomato with defective replicase gene of *Cucumber mosaic virus* (CMV). Seedlings derived from R<sub>1</sub> seeds of L-1, L-6-3 and L-13 lines showed high percentages of resistance to CMV infection. The resistance was equivalent to immunity by which inoculated seedlings showed no symptom and no virus was detected. Susceptible seedlings showed severe disease symptoms with high virus concentration. Non-Mendelian inheritance of transgene from R<sub>0</sub> to R<sub>1</sub> populations was revealed by chi-square test ( $\chi^2$ -test) as indicated by the segregation ratio of <3:1. The ratio of resistance versus susceptible varied in R<sub>2</sub> and R<sub>3</sub> populations although the transgene was consistently detected. The R<sub>3</sub> seedlings of L-13-47 L-13-76 and L-13-90 line exhibited 100% resistance. It is concluded that these 3 lines of transgenic tomatoes can serve as good germplasm for future development of tomato variety resistant to CMV.

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Thesis Advisor's signature