

Urakorn Thakaew 2010: Molecular Diversity of Tomato Thrips, *Ceratothripoides claratris* (Shumshur) (Thysanoptera: Thripidae) Populations Found in Thailand Using PCR-SSCP. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Professor Tipvadee Attathom, Ph.D. 99 pages.

Thrips, *Ceratothripoides claratris* ranks among the most noxious insects attacking several field and greenhouse cultivated crops in Thailand. Varieties or biotypes of thrips can not be differentiated morphologically. This study aimed to determine genetic variation among and within *C. claratris* populations in Thailand using DNA-based analysis. Based on sequences from other insects, available from GeneBank/EBML database, degenerate primers were designed for 9 genes of insect: 3 mitochondrial genes Cytochrome oxidase I (*COI*), ATP synthase subunits 6 (*ATP6*) and NADH dehydrogenase (*NADH*); 6 nuclear genes Phosphoenolpyruvate carboxykinase (*PEPCK*), Elongation factor1 α (*EF1 α*), Opsin (*OPS*), Alcohol dehydrogenase (*ADH*), Dopa decarboxylase (*DDC*) and Arginine kinase (*ARGK*). The thrips mitochondrial gene *COI* and the nuclear genes *EF1 α* and *ARGK* genes were amplified and cloned using the designed degenerate primers. The obtained thrips DNA sequences of each gene were used to develop locus specific primers. The developed specific primer sets and the published primers for the internal transcribed spacer (*ITS*) could successfully amplify specific DNA fragments from *C. claratris* in all populations studied. Intraspecific variation of twenty-six accessions of *C. claratris* collected from different areas in Thailand was determined by molecular analysis using SSCP techniques. SSCP analysis showed little polymorphism of specific amplified products. The amplified *EF1 α* gene product was apparently monomorphic and only 5, 3 and 7 banding patterns were detected for *COI*, *ITS* and *ARGK* loci. UPGMA cluster analysis of all populations distinguished 15 groups at 0.77 of similarity coefficient, using polymorphic bands pattern generated from 4 primer amplifications separated on poly acrylamide gel. All tested *COI*, *ARGK* and *ITS* genes have considerable potential to be used as DNA markers for population analysis in thrips.

Student's signature

Thesis Advisor's signature