

Janpen Pooksungnurn 2008: Survey and Diagnosis of Maize Mosaic Disease Caused by *Brome Mosaic Virus* in Thailand. Master of Science (Agriculture), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Assistant Professor Kanungnit Reanwarakorn, Ph.D. 88 pages.

This research was studied and diagnosed of *Brome mosaic virus* (BMV) which was found worldwide epidemics. By survey of maize mosaic disease caused by BMV in important maize growing areas in Thailand. Two isolates of BMV were detected by enzyme-linked immunosorbent assay (ELISA) technique in Kanchanaburi (KB) and Ratchaburi (RB) provinces. Both isolates caused local lesion on *Chenopodium amaranticolor* and systemic mosaic symptom on sweet corn. They were isolated, multiplied and purified. The purified viruses were shown with A_{260}/A_{280} absorbance ratio at 1.63 and 1.60 from KB and RB isolates, respectively. A single band protein was displayed with approximate at 21.68 kDa by Sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) technique. The two isolates were shown three RNA segments by extraction purified viruses. BMV-coat protein gene were composed of 573 nucleotides and encoded for 190 residue. They were displayed similarity of 99% nucleotide and 100% amino acid sequences with each other as well as 73% and 76-77% nucleotide and amino acid sequences, respectively, with GenBank database of BMV-F, BMV-R and BMV-type. Using Phylogenetic tree analysis with amino acid of CP-gene, both Thai isolates were separated groups from those GenBank isolates. By virulent assessment of the Thai isolates on 5 varieties of maize in greenhouse, percentage of maize disease and symptom development were shown the same level in both isolates. Using bioassay and confirming with ELISA technique, indicator plants were separated into three distinct groups, symptom with found BMV, symptom with negative tested BMV and symptomless with negative tested BMV.

Purified BMV-RB isolate was used as an antigen for polyclonal antibody (PAb) production. PAb reacted specifically with the BMV infected plants without cross reaction to SCMV, MCMV, SCMV-MDB and CMV. Base on this research, the characteristic and other properties of BMV have been useful for BMV diagnosis and efficacious disease control.

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Thesis Advisor's signature

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