

Nawarat Imjit 2011: Strategies of Pesticide Usage Reduction for Plant Disease Management in Chilli Plantation. Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Mr. Chainarong Rattankreetakul, Dr.sc.agr. 119 pages.

Disease management of chilli using pesticide treatment reduction was performed under plant spacing and seedling resistant induction. Effect of primary factor as plant spacing and secondary factor like Bion, clove oil and fertilizer was investigated. Close row planting illustrating percent of good produce quality weight was greater than wide row planting while Bion application showed the greatest percent of good quality weight. Interaction between primary and secondary factors, close row planting with Bion treatment illustrated the highest potential of good quality weight. Study on seedling resistant induction, seedling stimulated by chitosan as inducer substances were primary factor, and then transferred to plots with inducer substance application as Bion, silisa-immune plus and chitosan were secondary factor. No significant differences of good quality weight between primary factor and secondary factor were revealed. However, seedling induction with chitosan and then silisa-immune plus, also seedling without chitosan afterward with Bion illustrated higher potential of good quality weight than other treatments.

Efficacy of plant volatile oil to control *Colletotrichum gloeosporioides* using poisoned food technique was studied. The eugenol active compound at concentration of 200 ppm inhibited on mycelial growth and spore germination completely. Additionally, the efficiency of plant volatile oil pouring in soil was tested for soil microbial controlling. Eugenol at 2500 ppm with soil moisture at 50 % and eugenol at 200 ppm with soil moisture at 100 % were effected to decreasing the number of soil microorganism. The fumigation of soil with eugenol and geraniol for 10 and 20 day resulted on decreasing the number of soil fungi and soil bacteria.

Contaminated detection of *Colletotrichum* causing anthracnose on chilli leave and fruit from plantation with PCR reaction were performed. Specific primer, Col1/Col2 were used and a single specific band of 460 bp size was observed for three species of *Colletotrichum* like *C. acutatum* *C. capsici* and *C. gloeosporioides*. The PCR detection of merely chilli fruit with outstanding observation was revealed, at the minimum of 25 % of disease contamination weight.

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Thesis Advisor's signature