

Wasan Choochart 2014: Efficacy of Bacteria Isolated from Cucumber Leaf and Planting Soil for the Control of Downy Mildew Caused by *Pseudoperonospora cubensis*. Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Assistant Professor Wanwilai Intanoo, Ph.D. 72 pages.

Total of 108 isolates of bacteria were isolated from root zone soil (58 isolates) and leaves (50 isolates) of cucumber. *In vitro* test of all isolates for the inhibition of zoospore releasing of *Pseudoperonospora cubensis*, a causal agent of cucumber downy mildew was conducted by mixing cell suspension of bacteria (10^8 cell/ml) with sporangium suspension of *P. cubensis* (10^4 sporangia/ml) on depression slide. The result showed that six isolates (SDN-1, SDN-44, SDN-51, SDN-62, LBN1-2 and LBN1-7) provided inhibition of zoospore releasing in the range of 43.33-66.67% when compared with control at 48 hours after mixing. Under screenhouse condition, bacterial cell suspension (10^8 cell/ml), spore suspension of *Trichoderma harzianum* CB-Pin-01 (10^7 spore/ml) and metalxyl (125 ppm) were sprayed at 24 hours prior to the inoculation of *P. cubensis* (10^4 sporangia/ml) on cucumber plants. The disease incidences assessed at 7 days after the 3rd spraying indicated that the percentages of disease incidences of the treatments which sprayed with bacterial isolates SDN-51, SDN-62, LBN1-7 and *T. harzianum* CB-Pin-01 were non-significant different when compared with a chemical (metalxyl 125 ppm) treatment and non-pathogen inoculated control.

Under field condition, the results showed that the cucumber plants sprayed with *T. harzianum* CB-Pin-01, bacterial isolates LBN1-7 and SDN-51 had the lowest percentages of disease incidences (62.02%, 65.09% and 68.79%, respectively) which were significantly lower than chemical (metalaxyl) spraying (85.19 %). In addition, spraying cucumber plants with *T. harzianum* CB-Pin-01 and SDN-1 increased yield weight per plant by 64.29% and 47.14%, respectively when compared with the control.

Student's signature

Thesis Advisor's signature