

Kaikaew Suthumma 2009: Bioproduct Development of Antagonistic Bacteria for Controlling *Ralstonia solanacearum* Caused Bacterial Wilt of Tomato. Master of Science (Agriculture), Major Field : Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Niphone Thaveechai, Ph.D. 90 pages.

Antagonistic bacteria *Bacillus subtilis* strain CH4^{Am} (BS) having an effective growth inhibition of *Ralstonia solanacearum* strain To-Ud3^{Am} (RS), the causal agent of bacterial wilt of tomato (BWT) was carried out to develop bioproduct as powder formulation. Growth and inhibition activity of BS on the 10 media were compared and found that medium containing molasses1%+peptone0.5% gave the highest BS population of 13.39 logCFU/ml which was significantly different from Malt Yeast extract (MY) medium containing BS population of 13.14 logCFU/ml as a control medium whereas it had inhibition zone against RS at 0.72 cm which was significantly lesser than from MY having inhibition zone of 0.78 cm. MY medium was selected to produce BS inoculum for bioproduct development. Six bioproduct formulations were developed by mixing 8.25 logCFU/ml of BS inoculum obtained from MY medium with substrates and carries at 1:2 by volume : weight. After storage the products for 6 months at room temperature, F1 formulation contained BS+talcum+rice bran had the highest BS population of 1.88 logCFU/g and showed the highest inhibition zone of 0.9 cm against RS on NGA plate. Investigation on BWT control using tomato cv. Seeda Thip3 in commercial type greenhouse at Asian Institute of Technology, Pathumthani province by comparing the effectiveness of F1 formulation and silicon applications as solely or combination showed that F1+silicon as sodium silicate provided the highest tomato survival of 88% and yield at 240 g/plant which was significantly different from others and water control providing 11% tomato survival and 10 g/plant. This study is the first report on the successful application of bacterial antagonist as bioproduct formulation with silicon to control bacterial wilt of tomato caused by RS until harvesting period in the commercial type greenhouse.

Student's signature

Thesis Advisor's signature