Jaruwan Buasuwan 2013: Efficacy of *Bacillus* spp. Bioproducts for the Control of Root Rot Caused by *Pythium aphanidermatum* on NFT- Hydroponically Grown Lettuce Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Chiradej Chamswarng, Ph.D. 116 pages.

Efficacy of the three granule bioproduct formulations of *Bacillus spp.* was evaluated for the control of root rot caused by *Pythium aphanidermatum* on NFT- hydroponically grown lettuce (Butterhead). Application of granule formulation No.3 of *B. mycoides* FL17 (3.7×10^{14} CFU/g) provided the lowest disease incidence (25.17 %) whereas, the highest disease incidence (91.67 %) was found in the *P. aphanidermatum* inoculated control. The *Bacillus* sp. RO15 granule formulation No.3 (3.2×10^{14} CFU/g) provided 35.41 % of disease incidence. The application rate (20 g/50 L nutrient solution, without incubation) of *B. mycoides* FL17 granule formulation No.3 significantly reduced disease incidence on lettuce roots by 82.29 % as compared to the control. The use of granule bioproduct every week after the nutrient solution change effectively reduced the root rot incidence of lettuce by 61.39 % and enhanced growth promotion of lettuce by increasing plant fresh weight (84.61%).

In trial periods March-April were observed during the periods of high temperature (42 C). The disease severities high disease incidences (73.61 %) Granule bioproduct No.3 of *B. mycoides* FL17 effectively reduced disease incidences by 37.5- 82.29 % as compared to the control under high temperature conditions. Moreover, this formulation also provided better root rot suppression and the promotion of lettuce growth than the uses of *Trichoderma harzianum* fresh culture singly and as the combination with *B. mycoides* FL17 bioproduct. Application of *B. mycoides* FL17 granule formulation No.3 alone increased phosphorus and calcium (20, 10.64 %) in lettuce leaf and also provided significant reducion of root rot incidence (40.67 %). This efficacy was better than the use of *B. mycoides* FL17 granule bioproduct No.3 in combination with vermicompost (20 g/50 L nutrient solution) which gave 23.73 % of disease reduction. Eventhough, this bacterial bioproduct-vermicompost combination could not provide promising disease reduction, it could promote plant growth by giving the highest fresh weight of lettuce plants (149.19 g/plant).

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