

Wanaporn Wongnikong 2007: Using *Bacillus thuringiensis* subsp. *tenebrionis* and Entomopathogenic Nematodes *Steinernema siamkayai* for Controlling Stripe Flea-Beetle (*Phyllotreta sinuata* Stephen) in Chinese radish Field. Master of Science (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Associate Professor Jariya Chanpaisaeng, Ph.D. 118 pages.

Efficacy of the Btt bacterium (*Bacillus thuringiensis* subsp. *tenebrionis*) and the entomopathogenic nematode (*Steinernema siamkayai* KB strain) in controlling the strip flea-beetle (*Phyllotreta sinuata*) in Chinese radish at Lad Lum Kaeo district, Pathum Thani province, was elucidated. A survey of insect pests in the field before the beginning of the experiment showed that two species of insect pests namely diamondback moth (*Plutella xylostella*) and stripe flea-beetle (*Phyllotreta sinuata*) and one species of natural enemies named parasitoid wasp (*Cotesia plutellae*) had been present in the field in the first (June to August 2005) and second (October to December 2005) growing seasons. Following the applications of chemical, Btt, or nematodes, the percentage of insect damage was reduced. In the first growing season, the insect damage was 36.76% in the treatment combining chemical, Btt, and nematodes as compared to 64.79% in control (without any application). Using Btt or nematodes alone, the damage was 30.41 or 38.39% respectively. An alternate application of Btt with nematodes or a mixed application of Btt with nematodes did not provide additive effects as the insect damage was 33.76 or 33.74% respectively. Damage assessment on radish was also made. The damage was graded as follows: A = no or trace damage, B = small or moderate damage, C = high damage and not marketable. Highest percentage of "A" graded radishes was obtained in the Btt plus nematode treatment (38.86%), followed by the only Btt or only nematode treatment (34.10 or 28.40% respectively). In control (without any application), however, no "A" graded radish was produced. The radishes designated as "B" and "C" grades were of 29.58% and 70.42% of the total harvested produce respectively. The insect damage in the second growing season was higher than that in the first season (89.48% in the treatment without any application). However, the combining treatment (chemical + Btt + nematodes) still rendered highest reduction in insect damage (62.21%), compared to Btt or nematodes alone (69.90 or 73.50%), alternate application of Btt with nematodes (69.90%) or mixed application of Btt with nematodes (73.50%). In this season, no "A" graded radish was produced in any treatment. Highest "B" graded radishes (25.31%) were harvested from the chemical plus Btt and nematode treatment; while the Btt or nematode alone produced 14.86 or 8.50% "B" graded radishes. In non application treatment, 99.17% of the harvested radishes were highly damaged and non marketable (grade C). Both Btt and nematodes demonstrated a high survival in the soil in both seasons.

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Thesis Advisor's signature

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