

Noppon Suthayasai 2008: Efficacy of Antagonistic Bacteria for Control of Pummelo Canker.
 Master of Science (Agricultural Research and Development), Major Field: Agricultural Research and
 Development, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Chalida
 Leksomboon, Ph.D. 88 pages.

Bacillus sp. Strain C₁ C₃ C₄ and *Pseudomonas fluorescence* strain C₂ were tested for their ability to inhibit growth of *Xanthomonas axonopodis* pv. *citri* (Xac) Xci112-1 (a lime strain) and Xci133-1 (a pummelo strain) using paper-disc diffusion method. The *Bacillus* sp. (strain C₁ C₃ and C₄) inhibited growth of Xci112-1 and Xci133-1. Disease suppression of the C₁ C₃ and C₄ strains was evaluated by testing these bacteria against Xci112-1 and Xci133-1 using a prick inoculation method on pummelo leaves. In the laboratory test, leaves of pummelo cultivar Kao Num Peung were inoculated with 0.01 ml of the cell suspension of Xac either before or after inoculating the leaves with 0.01 ml of the tested antagonistic bacteria at 0 1 and 2 days on detached leaves. In the greenhouse test, leaves of pummelo cultivar Kao Num Peung were inoculated with 0.01 ml of the cell suspension of Xac either before or after inoculating the leaves with 0.01 ml of the tested antagonistic bacteria at 4 and 6 days. The results in laboratory and greenhouse tests showed that the application of C₁ C₃ and C₄ strains at 1 2 4 and 6 days before inoculating with Xci112-1 and Xci133-1 significantly reduced disease incidence. The highest reduction in disease incidence was observed when C₄ strain was applied 6 days before inoculating with the pathogen. *Bacillus* sp. strain mC₄ (a spontaneous tetracycline and copper oxychloride-resistant strain of C₄) was also evaluated in the greenhouse setting to determine its control efficacy against pummelo canker. Pummelo leaves were pricked by a sterilized needle and the wounded leaves were sprayed with mC₄ (10⁸ cfu/ml), followed by spraying with Xci133-1 (10⁸ cfu/ml). The application of mC₄ strain significantly reduced disease on pummelo by 75.9 and 84.8 % in two trials, in which the mC₄ strain was sprayed 1 and 4 time (at 5 day interval) respectively. The mC₄ strain, however, was less effective than copper oxychloride, a chemical bactericide. Survival of the mC₄ strain on pummelo leaves under greenhouse condition was determined at 1 3 7 10 15 and 30 days after application. The population of the mC₄ strain was at 10⁶-10⁷ cfu/g leaf after 15 days of application, but gradually declined to 10⁵ cfu/g leaf after 30 days of application. The copper oxychloride treatment (copper oxychloride+Xac) and mC₄ treatment (mC₄+Xac) significantly reduced populations of Xac on the leaves at 5 and 10 day after application, when compared to the control treatment. The C₄ strain was identified as *Bacillus subtilis*, based upon both morphological, physical and biochemical characteristics.

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 Thesis Advisor's signature

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