

Field Trial on Pest Control for *Plumeria rubra* in HZMB Hong Kong Port

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Background

Plumeria rubra is a species widely used in Hong Kong as a gardening plant and street tree. Its eye-catching and fragrant blossoms are the reason why landscape design is commonly used. However, pest infestation is very serious, especially in HZMB Hong Kong Port.

Objectives

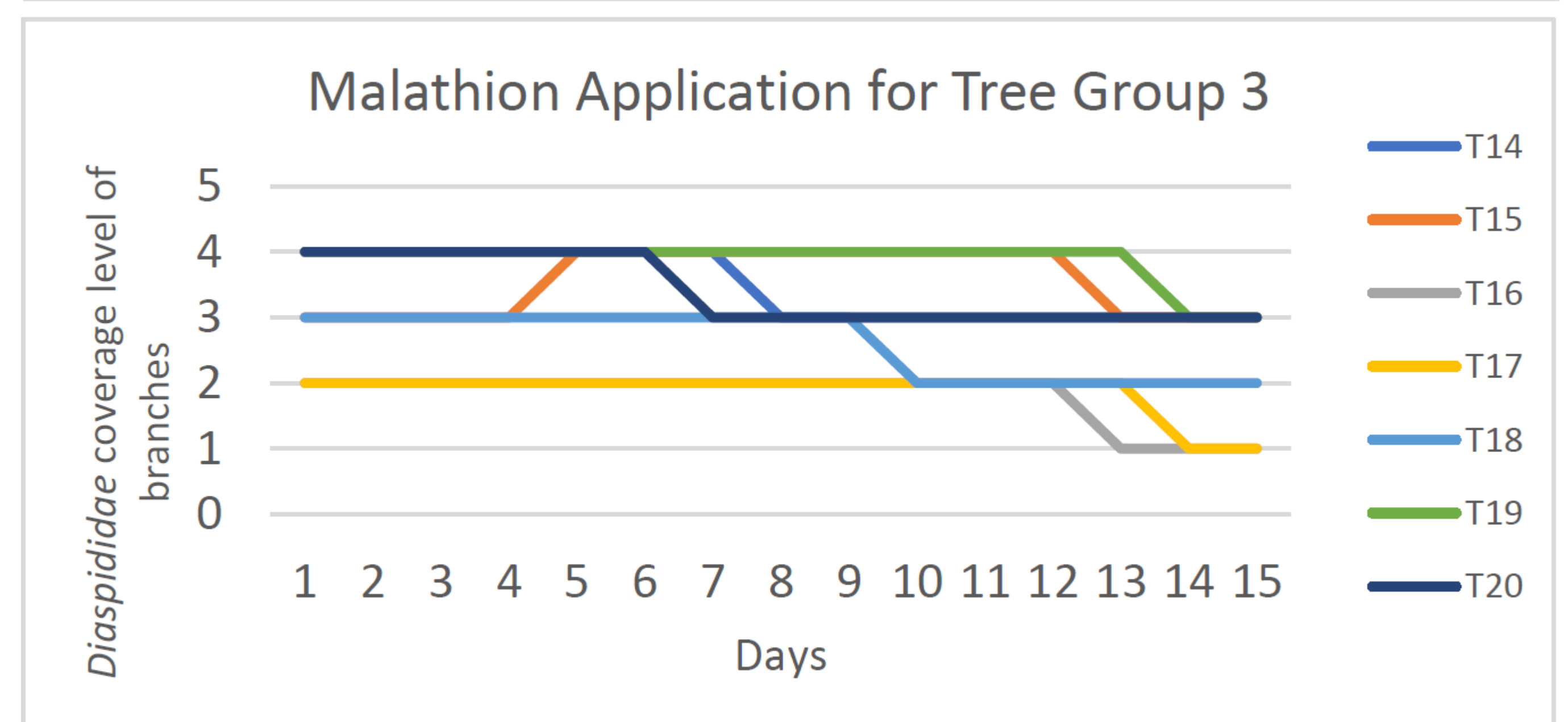
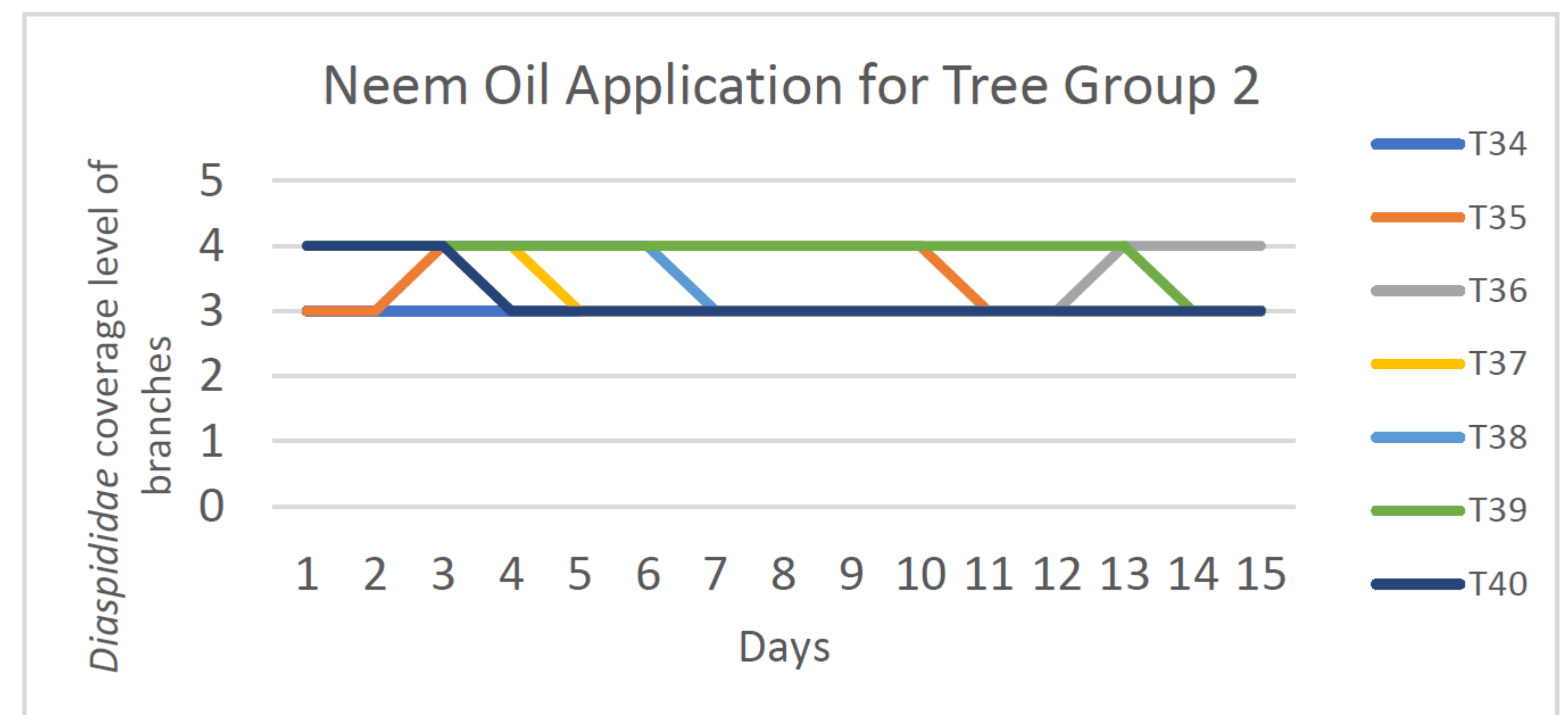
- To investigate the dominated pest on *Plumeria rubra*
- To compare the effectiveness of three types of pesticides application
- To study organic pesticides effectiveness on *Plumeria rubra*
- To introduce suitable pest management for *Plumeria rubra*

Methodology

3 tree groups of 6 to 7 *Plumeria rubra* were treated with 0.75 mg/l caffeine solution, 10 ml/l neem oil solution, and 1.7 ml/l malathion solution, respectively. Each treatment was preformed a total of 3 times, at 5-day intervals. Insect glue traps were applied each tree before 1st treatment and after 3rd treatment. 15-day observation was conducted for Apterous Insects (*Diaspididae*) and *Plumeria rubra*.

Results

Diaspididae is the domain family observed on *Plumeria rubra*. For the comparison between 4 tree groups, the most effective pesticide was 0.75mg/L caffeine solution; the second effective treatment was 1.7ml/L malathion solution; the least effective pesticide was 10ml/L neem oil solution for *Diaspididae* control on *Plumeria rubra*.



Discussion

Caffeine is a naturally occurring alkaloid that acts as a neurotoxin for many insects. For *Diaspididae*, neurotoxic effects can impair feeding, reproduction, and mobility, effectively reducing pest populations. Caffeine can also act as an antifeedant, discouraging pests from eating treated leaves. This is particularly effective for *Diaspididae*, which rely on constant feeding on plants for survival. However, *Diaspididae* are covered by scales that block the pesticides from entering the main body. Familiar practical skills are required to ensure all pests are reached with sprays.

Conclusion

Research on the control of *Plumeria rubra* pests is Insufficient. This study preliminarily demonstrated the application of caffeine in the pest control of *Plumeria rubra*. It is a significant result for further investigation of a horticulture pesticide with non-toxic to humans and animals.

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