Thesis Title	Bioecology of Eriophyid Mite and Damage on Longan in Chiang Mai and Lamphun Provinces
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Abstract

Four-legged mite *Aceria dimocarpi* (Kuang) is reported for the fist time in Thailand. It is an important pest of longan (*Dimocarpus longan* Lour.). Biological study of *A. dimocarpi* was conducted on 12 days old longan seedlings under laboratory conditions with approximately mean temperature of 25.05 ± 0.24 °C and 68.23 ± 0.93 % relative humidity. There were 4 developmental stages of *A. dimocarpi* ; the egg, first nymph, second nymph, and adult stages, with the average duration means of each stage were 2.88 ± 0.02, 0.94 ± 0.02, and 0.76 ± 0.3 days, respectively. The first and second quiescent stages were lasted 0.69 ± 0.01 and 0.85 ± 0.04 days, respectively. The average preoviposition period of the adult female was 2.43 ± 0.17 days. The fecundity of each female was 2.71 ± 0.04 eggs with a mean of 0.91 egg per day, and fertility rate of 68 %. The average life expectancy of individual was 5.14 ± 0.33 days. The survival rate observed from first nymph through adult stage of this mite was 34 %.

Population of the mites were observed throughout the year at monthly interval in four longan orchards in Chiang Mai and Lamphun, the results revealed that the maximum number of mites were counted at flowering and initial fruit setting stages in March and April. At the maximum peak, ranges of 20-257 mites per leaf were observed. In May, a number of mites were dropped down to 0-14 mites per leaf sample. Two months later in July, a new flush

of shoots were produced on longan trees and number of mites were slightly increased up to 14-147 mites per leaf. During October to November, another set of flush of shoots were produced and 0-40 mites per leaf were observed. Regression analysis of number of mite per leaf in relation to temperature, relative humidity and amount of precipitation indicated that temperature had no influenced on the mite population dynamics. Nevertheless, the relative humidity and amount of precipitation demonstrated slightly affected on the mite population in certain orchards.

Samples of curled shoots and inflorescences of Daw cultivar longan collected from 4 locations in Chiang Mai and Lamphun provinces were transferred to the laboratory for examination. The result showed that the four legs mite (*A. dimocarpi*) was the causal agent. The mite normally fed on apical bud or small young shoot of longan caused severely reduced in leaf size. Infested leaves of young shoot were spindly and twisted with curled margin. The margin of each stunted leaf was either curled upward or downward. Moreover, both surfaces of affected leaves were covered with abundant very fine hairs called erinea. At flowering stage, brooming also appeared as inflorescences proliferated due to internode shortening.

The surveys revealed that 1-27 % of young shoots and inflorescences in one square meter of tree canopy were infested by the mite and shown such the symptoms. Infestations of the mite were scattered around the canopy except at Muang Nga, in October, highly damages were observed on east and south directions. When counted the number of inflorescences of Daw cultivar from four orchards in April, a range of 9-42 damage inflorescences per tree around the canopy were noticed. Regression analysis specified that there was no correlation between the population of the mite and percentage of plant damage.

Infested inflorescence bore no fruit or 2-3 fruits per inflorescence. In contrast, 16-22 fruits were borne on single normal inflorescence.

Identification of predatory mites, collected by mean of the Berlese funnel from leaf shoots and inflorescences of longan from the four orchards, were *Amblyseius paraaerialis* Muma and *Phytoseius hawaiiensis* Prasad which belonged to Family Phytoseiidae. The highest population of these predators occurred in March with a mean of 8.5 individuals from 31 inflorescences.