Effect of Temperature on the Developmental Stages of the Two Colour Leaf Beetle *Plesispa reichei*, a Pest of Coconut

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Plesispa reichei Chapuis (Coleoptera: Chrysomelidae) is a recently introduced pest of coconut in Sri Lanka. Both adults and larvae attack coconut seedlings and young palms. Since its accidental introduction, *P. reichei* has spread to the coconut triangle and many other coconut growing areas in the country. Plans are under way to develop a mass rearing programme for the pest for use in a biological control programme using a parasitoid for which life cycle information is important. This investigation was carried out to determine the effect of temperature on growth and duration of development of the different life cycle stages of *P. reichei*. One day old eggs collected from laboratory cultures were placed on immature coconut leaf pieces and held in boxes (4×9×6 cm) that were kept inside incubators maintained at 25°C, 28°C and 31°C under 12:12 photo period and 75% relative humidity, to determine the effect of temperature on development. Leaf pieces were renewed every two days. Thirty eggs were maintained at each temperature in this manner and the development followed through until adult emergence. Head width and body length of larvae and size of pupae were measured daily.

Incubation period of eggs varied from 8.9±2.0, 8.0±1.0 and 7.9±1.0 days at 25°C, 28°C and 31°C, respectively. Four larval instars were identified based on head capsule width measurements. Temperature had a significant effect on the development of 2nd and 4th instar larvae, where development times of 5.4±0.2, 4.0±0.2 and 4.6±0.2 days were recorded for 2nd instars and 14.24±0.2, 10.32±0.1 and 10.13±0.1 days for 4th instars at the three temperatures respectively. Thus, the duration of larval instars was higher at lower temperatures.

Mean body length of larval instars was significantly different at the three temperatures, in 1st instar (2.88 ±0.2 mm, 2.32±0.2 mm and 2.41±0.2 mm) and 2nd instar larvae (4.2 mm, 3.9 mm and 3.0 mm), with larvae having a shorter body length at higher temperatures. Temperature had a significant effect on pupal development as well. Lower temperatures produced larger pupae with a longer pupal period. Total duration of development of *P. reichei* from egg to adult was 39.0, 30.2 and 29.7 days at the three temperatures, 25°C, 28°C and 31°C, respectively.

Lower temperatures had a significant effect on the duration of development and the size of the developmental stages of *P. reichei*. These findings provide baseline data for mass rearing of *P. reichei* under laboratory conditions and the suitability of host stages (in terms of size) for oviposition by the parasitoid in a biological control programme.

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