ISSN 0013-8738, Entomological Review, 2009, Vol. 89, No. 7, pp. 755–756. © Pleiades Publishing, Inc., 2009.
Original Russian Text © V.P. Semyanov, 2009, published in Entomologicheskoe Obozrenie, 2009, Vol. 88, No. 3, pp. 497–499.

On Diapause in *Leis dimidiata* (Fabr.) (Coleoptera, Coccinellidae)

V. P. Semyanov

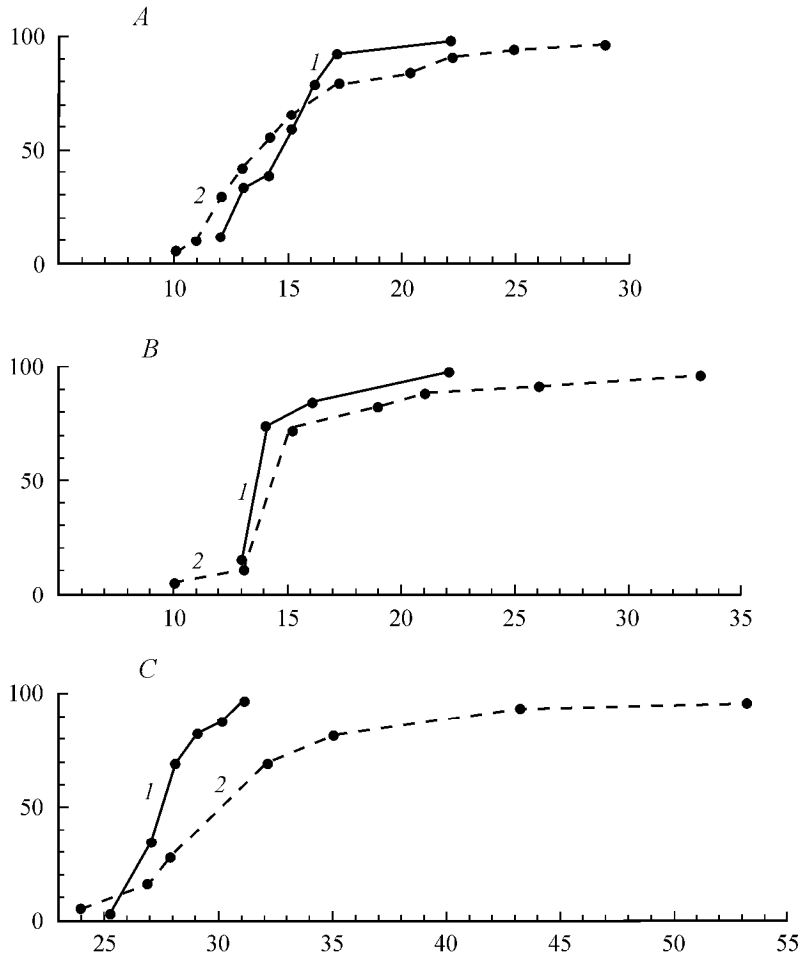
Zoological Institute, Russian Academy of Sciences, St. Petersburg, 199034

Received December 2, 2008

Abstract—The experiments have shown that at least the Guangzhou populations of *Leis dimidiata* (Coleoptera, Coccinellidae) have no photoperiodic diapause.

DOI: 10.1134/S001387380907001X

There are many publications on photoperiodic imaginal diapause in Coccinellidae. Their review is given in the work of A. Honek and I. Hodek (1966). However, there was no information on the tropical species, for example, *L. dimidiata*. Diapause was never observed during mass rearing of *L. dimidiata*, at a temperature of 25 and 30ºC within any photoperiods (from clock-round day to clock-round darkness). For the final solution of this question, special experiments were carried out on the effect of short-day (6 and 8 h)



Dynamics of maturation of females of *Leis dimidiate* (Fabr.) at 30ºC (*A*), 25ºC (*B*), and 20ºC (*C*) and daylength 18 h (*1*) and 8 h (*2*). Ordinate: the proportion of matured females (%), abscissa: maturation days.

The average maturation time of females of *Leis dimidiata* (Fabr.) at different temperatures and daylength

Temperature, °C	Daylength, h	Average maturation time, days
20	6	30.4 ± 3.04
	8	31.8 ± 1.01
	18	28.0 ± 0.24
25	8	16.4 ± 1.1
	18	15.5 ± 9.9
30	8	15.3 ± 0.7
	18	15.1 ± 0.7

and long-day (18 h) photoperiods, at a temperature of 20, 25, and 30ºC, on induction of imaginal diapause in this coccinellid species.

Larvae were bred on peach aphid (*Myzodes persicae* Sulz.), at a temperature of 25ºC and a 20 h long day, using the method worked out by the author earlier (Semyanov, 1996). The beetles, after emergence from pupae, were kept in pairs (one male and one female) in 9-cm Petri dishes under experimental regimes until maturation of the female. They were fed abundantly and daily. The results of these experiments are presented in the figure and the table.

Analysis of results given in the figure shows that under all photoperiodic regimes and all temperatures, 100% of females mature. Yet, under short-day regimes some lengthening of the period of female maturation occurs. Thus, at 30ºC, it was 7 days in 5%, at 25ºC, 11 days in 10%, and at 20ºC, already 18 days in 20% of females. The beginning of female maturation at 25 and 30ºC is practically the same and occurs 10–13 days after beetles start emerging from pupae. At 20ºC, the beginning of female maturation is delayed and occurs on the 24th day, which may be accounted for by the influence of lower temperature, since both during the long-day and short-day photoperiod, maturation of females occurs simultaneously. Data on the average duration of female maturation are presented in the table.

As can be seen from the table, the average time of female maturation under 8 and 18 h photoperiodic regimes is the same. At 20ºC, under short-day regimes (6 and 8 h), the average time is 2–3 days longer than under the 18-h light day regime. These data agree well with those on dynamics of female maturation.

Thus, it has been shown experimentally that in *L. dimidiata*, at least in the population from Guangzhou (China), situated to the south of the Tropic of Cancer, photoperiodic adult diapause is absent.

In this case, the adaptive synchronization of the annual cycle with seasonal changes in weather conditions is performed by the trophic diapause.

REFERENCES

1. Honek, A. and Hodek, I., *Ecology of Coccinellidae (Series Entomologica, 54)* (Kluwer Acad. Publ., Dordrecht, 1996).
2. Semyanov, V.P., "Methods of Rearing and Prolonged Storage of a Tropical Coccinellid, *Leis dimidiata* (Fabr.) (Coleoptera, Coccinellidae)," Entomol. Obozr. **75** (3), 714–720 (1996) [Entomol. Review, **76** (6), 773–778 (1996)].