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Effect of temperature on the biology of almond green aphid *Brachycaudus amygdalinus* under laboratory conditions

S. H. NOURBAKHSH[1], E. SOLEYMAN-NEJADIAN[2], M. S. MOSSADEGH[2] and A. REZVANI[3]

1- Agricultural and Natural Resources Research Center of Chaharmahal & Bakhtiari

2- Shahid Chamran University, Ahwaz

3- Plant Pests and Diseases Research Institute, Tehran

ABSTRACT

The relationship between temperature and developmental rate of *Brachycaudus amygdalinus* Schout (Homoptera: Aphididae) was studied at six constant temperatures (10, 15, 20, 25, 27.5 and 29 ± 0.7°C), 40 ± 10 RH and a photoperiod of 12: 12 (L: D). The linear regression model was used to describe developmental rate as a function of temperature. The duration of nymphal stages decreased from 14.04 to 5.8 days at 10 to 27.5°C, respectively. However, it increases to 8.39 days at 29°C. The mortality rate of the first nymphal stage was high at 30°C so that none of them could develop to fourth stage. The lowest (31%) and highest (89%) survival rate were obtained at 29 and 10°C, respectively. The Lactin-2 model was the best nonlinear model to describe the relationship between developmental rate and temperature, suggesting the upper threshold temperature of 29-30°C. The linear regression revealed that the lower thermal threshold was –2.84°C, approximately the same temperature that make this species active in nature. The life span of adult aphids was 6.74 days at 20°C. The following life table parameters have been recorded for *B. amygdalinus* at 20°C: intrinsic rate of increase (r_m = 0.263 1/day) mean generation time (T = 11.49 days), doubling time (DT = 2.63 days), net reproductive rate (R_0 = 20.62) and gross reproductive rate (GRR = 40.59).

Key words: Developmental rate, temperature threshold, *Brachycaudus amygdalinus*, life table, almond, Shahrekord.

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Address of the authors: S. H. NOURBAKHSH, Agricultural and Natural Resources Research Center of Chaharmahal & Bakhtiari, Shahrekord, Iran; E. SOLEYMAN-NEJADIAN and M. S. MOSSADEGH, Plant Protection Dept., Agri. College, Shahid Chamran University, Ahwaz, Iran; A. REZVANI, Plant Pests and Diseases Research Institute, P. O. Box 1454, Tehran 19395, Iran.