

Biology/Phenology

DEVELOPMENT AND VALIDATION OF A DEGREE DAY MODEL TO PREDICT
PHENOLOGY OF LACANOBIA FRUITWORM, *LACANOBIA SUBJUNCTA*

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The basis for a predictive model is formed from the constant temperature developmental data and field phenology data. *Lacanobia subjuncta* were reared at constant temperatures. Temperature development thresholds were determined for each stage and degree-day estimates were determined for the entire life cycle. *L. subjuncta* phenology was monitored at several sites throughout the summer of 2000. Temperatures were also monitored at all sites. Pheromone and bait pan captures and larval beat tray samples and visual observation of egg masses and foliage feeding were collected weekly. No spraying was conducted in the sampled area to avoid effects of insecticides on *L. subjuncta* phenology. Adult *L. subjuncta* were dissected to assess ovarian development. Model predictions based on in-orchard temperatures were compared to biological data collected at each site.

Results and Discussion

A degree-day model has been developed that accurately predicts the development of *L. subjuncta*. The lower threshold is 7°C (44°F) and an upper threshold is 31°C (88°F). Degree-day requirements based on constant temperature data for eggs, larvae and pupae were 137.1, 874.0 and 535.8 degree-days, respectively. Eggs, larvae and pupae required field temperatures of 130.7, 946.9 and 492.3 degree-days, respectively. The pre-oviposition period was estimated at 280 degree-days. This model will be very useful in timing control tactics and sampling activities. It appears that the best timing for insecticides is at 700 degree-days after first moth flight. This degree-day total coincides with approximately 80% egg hatch and is prior to the appearance of the fourth instar larva.