

Section IV. Biological and Cultural Control

Biological observations on brown lacewings and their biocontrol potential in cropping systems.

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Brown lacewing adults were collected during the winter of 1994/95 and attempts were made to rear immatures in the laboratory. None of the larvae survived to the pupal stage. Larvae collected in the field (Fall 1995) have successfully been reared through pupation to adult emergence. However, a number of pupae have been parasitized. Several different wasp parasitoids have emerged. These will be sent to specialists for identification.

Several species of brown lacewings may be involved. The one most frequently collected on grape appears to be *Hemerobius stigma*. Work by other researchers on a closely related species *H. pacificus* indicates that species lived an average of 72 days as adult (maximum of 147 days) and laid an average of 715 eggs/female (maximum of 2554). An interesting aspect of *H. pacificus* biology is its ability to complete development at low temperatures. The lower thermal threshold (Neuenschwander, 1975) for eggs (0.4°C), larvae (4.1°C) and for pupae (0.6°C) make it one of the lowest known developmental thresholds among parasitoids and predators. This threshold is well below that of the common prey species and makes *H. pacificus* well suited for cool weather predation. In this region larval activity is well underway in September with pupation in October and adult emergence in November. The number of generations per season is not known.