

Biological Control

Codling Moth Biological and Cultural Control: II. Parasites and Parasitism

Thomas R. Unruh
USDA-ARS, Wapato, WA

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Control techniques for codling moth are almost exclusively directed at the adults, eggs or neonate larvae. Natural control agents such of predators and parasitoids are more likely to affect eggs and cocooned larvae. Two parasitoids of codling moth have been introduced and established in North America since our recent introductions began in 1991. These are *Liotryphon caudatus* from S. Russia and *Mastrus ridibundus* from Kazakhstan, both parasitoids of the cocooned larvae. Of these, *Mastrus* has become most abundant. Methods to assess parasitism of codling moth in the cocoon stage have historically depended on the use of trap bands. We have data to suggest that this can be misleading. Hence studies were conducted to discover factors that may influence the susceptibility of cocooned larvae to parasitism and predation. Height of cocoons in tree canopy was shown to be unimportant but the size (width) of crevices in which cocoons were spun was important for both parasitism and predation rates. Parasitism was greatest at intermediate crevice widths (2-4 mm) and predation tended to increase with increasing crevice width. Distribution throughout Washington and Oregon of the introduced parasitoids is also reviewed.