

## Thresholds/Monitoring/Sampling

### Prediction of Obliquebanded Leafroller Activity on Sweet Cherries for Improved Timing of Control Measures

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This is a multi-year project being conducted in three commercial orchard sites with high OBLR populations in The Dalles cherry-growing district. The project's goal is to develop a predictive degree day model for improving the control of the obliquebanded leafroller (OBLR) in sweet cherry. No OBLR control sprays were applied to these blocks throughout the 1999 season. These blocks were sampled at ten day intervals throughout the 1999 growing season. It was determined that a majority of the overwintering generation larvae emerge from their hibernacula between stages 2 (side green) and 5 (open cluster). Results thus far suggest the larvae are evenly distributed throughout the top and bottom sections of the tree through bloom. Overwintering larvae begin to pupate in mid-May, with most of them pupating by the end of May. Adult flight of the overwintering generation began 847 degree-days (°D) after January 1 around mid to late May. The first moths caught in pheromone traps were used as a Biofix point. The first flight peaked (50% catch) at 156 °D after Biofix and was 95% complete at 546 °D. The overwintering flight began at pit hardening for The Dalles cherry district. The summer generation flight (second flight) peaked at 1841 °D and was 95% complete by 2259 °D. Degree-days were calculated using the first moth catch as a Biofix point. An upper threshold of 85°F and lower threshold of 43°F with a single sine curve and vertical cutoff was used to calculate degree-days.

Oviposition of the overwintering flight began 119 °D after Biofix. Most of the egg masses had been laid and their larvae emerged at 995 °D, coinciding with the end of Bing harvest in The Dalles area. The first summer generation larvae were detected at 612 °D, during Royal Anne harvest. After 1140 °D a majority of the summer generation larvae had reached a size where they could be easily detected in the bins, about the time of Lapins and freezer/canner harvest in The Dalles.

The developmental times of pupae and egg masses in the field were determined using caged pupae and eggs. These data indicate that OBLR larvae that have fed on sweet cherry require 330 °D to complete pupation. Egg masses on sweet cherry leaves require 286 °D after oviposition to emerge.

Post-harvest field trials were conducted to determine the efficacy of Success (spinosad), RH-2485 (methoxyfenozide), and Javelin (*Bt*) against summer generation larvae. All three treatments were effective and controlled summer larvae. Success was recently registered on stone fruits (including sweet cherries) for leafroller, leafminer and possibly cherry fruit fly control. The ecdysone agonist RH-2485 (methoxyfenozide) is being developed for use on pome and stone fruits. It is a very selective insecticide and has activity only against lepidopterous pests.