COOPERATIVE EXTENSION
WASHINGTON STATE UNIVERSITY

WSU Puyallup REC
WSU PLS-75
Updated August 2003

Winter Moth

A Key Pest of Blueberries in the Pacific Northwest

Prepared by Glenn Fisher, Extension Entomologist, Oregon State University
Arthur L. Antonelli, Extension Entomologist, WSU Puyallup
and Carrie R. Foss, Community IPM & Pesticide Education Coordinator, WSU Puyallup

Life History

Four species of inchworms or spanworms in the genus *Operophthera* may injure blueberries. Their life histories are similar in that only one generation per year emerges. Eggs overwinter on the trunks and branches of deciduous trees and shrubs, including blueberries. The eggs can begin hatching as early as March, and larvae (Fig. 1) can be found on blueberry plants through June. The larvae (worms, inchworms, or spanworms) feed on buds, bloom, fruit, and foliage of a variety of plants. The worms then drop to and burrow shallowly in the soil, and transform to the pupal (non-feeding) stage. In late October through December, the moths (Fig. 2) become active and lay eggs on twigs, limbs, and trunks of host plants. The eggs overwinter and begin hatching in late March.

**Fig. 1. Winter moth larva.
By A.L. Antonelli.**

**Fig. 2. Winter moth adults: left, males; right, non-flying females.
By A.L. Antonelli.**

How Infestations Begin

Blueberry plants can become infested by planting rootstock that is infested with eggs of winter moth or by larvae that drift into established plantings from infested vegetation adjacent to the blueberries. Young larvae produce a fine silk web that allows them to be blown considerable distances by winds. This larval migration occurs primarily in April and May. Light infestations if unnoticed or untreated in one season may cause considerable damage the following season.

Damage
Larval damage can begin in late March. Newly hatched larvae slip between bud scales and feed within bud tissue. Flower buds, bloom, and fruit are damaged, and feeding finishes by mid-June.

Management
Where winter moth caused damage in the previous year, damage will likely occur during the current year. Suggestions for management during the current year or coming year include:

1) Dormant Season: The use of a dormant oil spray at the rate of three gallons of oil per 100 gallons of water should kill the eggs. This regimen is utilized extensively in orchards for a number of pests that overwinter on trees, and should be effective against the winter moth. The oil essentially suffocates the eggs. An open period of mild weather in February or early March is probably good timing. Extremely cold weather occasionally causes oils to burn plants, so it is best to avoid making applications during cold periods. *Do not use oils on blueberries with foliage.* Leaf burn will occur! Also, the addition of a registered insecticide* will enhance the control of eggs (as well as any scale insects that may be present). Currently recommended insecticides should also provide control in plants are thoroughly covered. Always follow label instructions carefully. Pay close attention to any statements about bees in the Environmental Hazards section of the label.

2) Spring: Carefully inspect plants (particularly those near field edges adjacent to and downwind of broadleaf trees) beginning at budbreak through fruit set for small larvae. Even just three or four larvae per plant may cause heavy damage to bloom and fruit.

Tips for Successful Management
Winter moth egg hatch can occur over a period of weeks in a blueberry planting. When an insecticide is applied after spring regrowth, always inspect plants for larvae on a weekly basis after application. Insecticides without oil do not kill the eggs. Furthermore, due to the short residual lives of the insecticides used on blueberries, reinfestations may occur from eggs remaining on the plants.

- Two or possibly three sprays per season may be necessary to control the larvae "ballooning" into the blueberries from adjacent sources of infestation.
- Young larvae are easier to kill than older larvae. Inspect plants when new growth is ½ to 1 inch long. Apply insecticides at this time (before foliage is webbed together by the larvae inhibiting spray coverage).
- Winter moth larvae tend to burrow into flower buds and pedicels, making them more difficult to control. Therefore, managing winter moth problems prior to bloom will not only to protect pollinators, but will also improve management success.
- Finally, be aware of infested host plants next to your blueberries. Controlling the larvae here may reduce the problems encountered in the blueberries.

*Please refer to the current edition of the PNW Insect Management Handbook for exact recommendations for chemical control.