



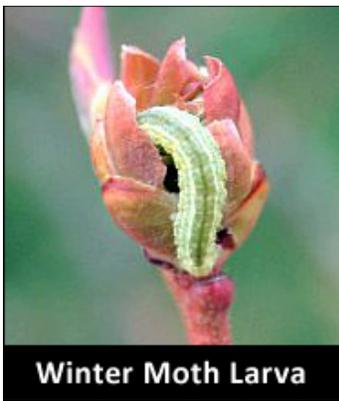
## Massachusetts IPM Berry Blast

**April 9, 2013**

### Winter Moth

**Winter Moth** (*Operophtera brumata*): This is a new and important pest of blueberries, apples and other deciduous plants, especially in Southeastern New England. They can severely defoliate trees and bushes. Moths emerge from the soil usually in late November and may be active into January. The male moths are light brown to tan in color and all four wings are fringed with small elongate scales that give the hind margins a hairy or fringed appearance. The female is gray, almost wingless (brachypterous) and, therefore, cannot fly. Females are usually found at the base of trees or scurrying up tree trunks. Winter moth caterpillars are pale green caterpillars with a white longitudinal stripe running down both sides of the body. They are “loopers” or “inchworms” and have just 2 pairs of prolegs. At maturity, the caterpillars will be approximately one inch long, whereupon they drop to the soil for pupation. Pupation occurs from late May into early June. Winter moth caterpillars are often found in association with both the fall and spring cankerworms, which look and have similar feeding patterns to the winter moth caterpillar.

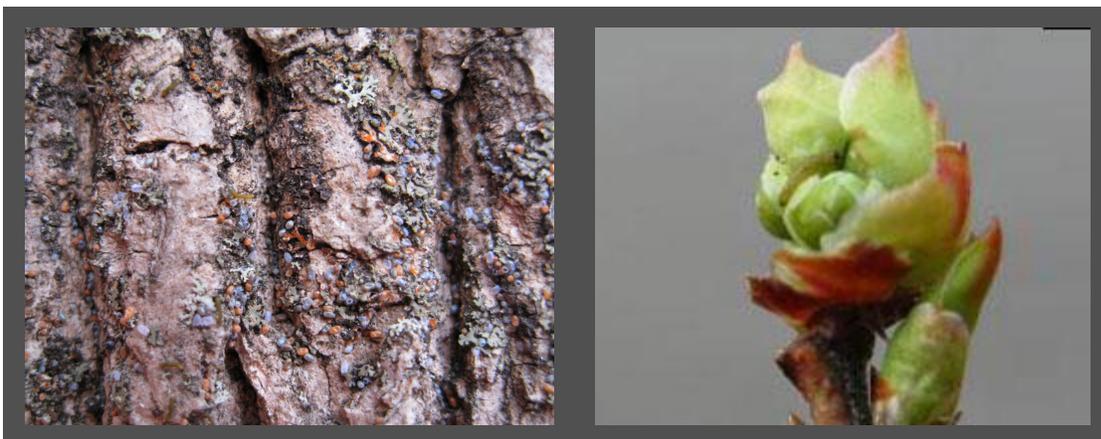




**Life Cycle:** After mating, the female deposits eggs loosely in bark crevices, under bark scales, under lichen, or elsewhere. The adult moths then die and the eggs over-winter. Eggs are dark-colored at first but turn orange within 3-4 weeks. In late-March or early-April, just prior to hatching, they turn red and eventually a deep, shiny blue just prior to hatching. Eggs hatch when temperatures average around 55 °F. **It is believed that egg hatch in Massachusetts occurs when 173 GDD above a base of 40° F (starting Jan 1) have accumulated**, which is historically during the second week in April but earlier if temperatures are atypically warmer, depending. This means that egg hatch occurs just at or right before bud break of most of the host plants. After hatching, the larvae wriggle between bud scales of newly swelling buds of such hosts as: maples, oaks, ash, apples, crabapples, blueberry, cherries, etc. and begin feeding.

See <http://newa.cornell.edu/> or <http://www.weather.com/outdoors/agriculture/growing-degree-days/01002> to calculate the Growing Degree Days for your location. Good bio-indicators are flowering red maples and green tip on Macintosh apples.

See <http://extension.umass.edu/fruitadvisor/2013-bud-stages-for-apple> for apple. **This year, models suggest that we will reach egg hatch on or near April 15, 2013.**



**Damage:** Caterpillars feed within both flower and foliar buds. Once a bud has been devoured from within, the caterpillar will migrate to other buds and repeat the process. Destruction of the flower buds leads to greatly diminished harvest on fruit crops. Older

larvae feed in expanding leaf clusters and are capable of defoliating trees and other plants, when abundant.

**Management:** A dormant oil spray to the trunks and branches of bushes may be helpful to kill the overwintering eggs before they hatch. However, some eggs are under bark flaps and loose lichen and may be protected from oil sprays. Caterpillars may also invade host plants by ballooning onto them after treatment has been applied. Several insecticides are labeled for use against either Winter Moth or Spanworm or both and are outlined in the table below.

Additional information can also be found at: <http://extension.umass.edu/landscape/factsheets/winter-moth-overview>

<b>Blueberry Bud Stage</b> <i>Image and Description Source: <a href="http://Michigan State University Blueberry Facts website">Michigan State University Blueberry Facts website</a>.</i>		
 <p><b>Dormant</b>  <b>Description:</b> No visible swelling of the fruit buds. Bud scales tightly closed. No visible signs of growth.</p>	 <p><b>Bud Swell</b>  <b>Description:</b> First sign of growth as plant growth begins in the spring. Visible swelling of the flower buds; outer bud scales begin to separate at the tip revealing paler interior bud scales. This bud stage can usually tolerate cold temperatures of 10 - 15°F.</p>	 <p><b>Budbreak-Green tip</b>  <b>Description:</b> Flower buds open and the individual flowers can be seen between the bud scales. Can tolerate cold temperatures of about 20°F.</p>
<b>Recommendation for Controlling Winter Moth or Spanworm</b>		
Dormant oil, 2-2.5% <b>plus</b> Esteem 35WP, 5 oz/A <b>or</b> Confirm 2F, 16 oz /A <b>or</b> Asana XL, 4.8-9.6 oz/A	Dormant oil, 2-2.5% <b>plus</b> Confirm 2F, 16 oz/A <b>or</b> Delegate 3-7 oz/A <b>or</b> Assail 70WP, 1.9-2.3 oz/A <b>or</b> Asana XL, 4.8-9.6 oz/A <b>or</b> Esteem 35WP, 5 oz/A	<b>NO OIL AFTER BUDSWELL</b>  Confirm 2F, 16 oz <b>or</b> Delegate 3-7 oz/A <b>or</b> Asana XL, 4.8-9.6 oz <b>or</b> Esteem 35WP, 5 oz

**For detailed information concerning the biology and management of Winter Moth, visit the following:**

<http://extension.umass.edu/landscape/fact-sheets/winter-moth-identification-management>

<http://extension.umass.edu/landscape/fact-sheets/winter-moth-overview>

*Archived IPM Berry Blasts are available at the [UMass Extension Fruitadvisor](#) website.*

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