WINTER MOTH IN CRANBERRY

UMass Cranberry Station Martha Sylvia April 2010

Small 1st instar larvae with black head Older full size winter moth ready to pupate

Winter moth has only recently appeared as a pest in southeastern Massachusetts and on cranberry. This insect has long been a pest in Europe and likely made its way into the US via Canada. Unfortunately, the larvae hatch early in the spring and could do much damage before sweeping begins on cranberry in mid-May. There have been reported losses in cranberry from winter moth in the last 2 years and high counts (50-100) larvae have been found in sweeps in the first 2 weeks of May 2009. Winter moth larvae feed on a number of deciduous trees including oak, maple, and ash. They prefer fruit trees such as apple, crabapple, cherry and blueberry. When given a choice, they would abandon cranberry, but when not given a choice, the larvae will eat cranberry. Because the female moths do not fly, if the female develops on cranberry, many eggs will be laid there for the following year. If you have seen a flight of brown moths over or near your bog in November and December last year, it likely means there was a female there.

Eggs generally begin hatching in mid-April. Researchers at UMass are predicting very high numbers of this pest this year in Massachusetts based on moth flight. Once hatched, the tiny caterpillars seek swelling host plant buds and wriggle in to feed. Many larvae per bud or a slowness of the buds to open can lead to loss of both leaves and flowers. The tiny larvae will burrow into developing buds, preferring the flowering buds. Once they have eaten out one bud, they will move onto another bud. The tiny larvae are hard to distinguish from black-headed fireworm as they too have a black head.

Once slightly larger, the larvae look like our typical green spanworms (they are in the same family as the green spanworms we already scout for.). Winter moth caterpillars are pale green caterpillars that when larger have 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, generally around late May. 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. Once winter moth caterpillars become free-feeders (after the buds have opened), they are easier to control. Orthene, Avaunt, Intrepid and Delegate are all good choices. Sevin and Diazinon are not; as spanworm are often resistant to these compounds.

Small 1st instar larvae with black head Medium size winter moth inchworming around

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From **Identifying the Life Stages of Winter Moth** by Bob Childs et al, UMass - Amherst Extension
http://www.umassgreeninfo.org/fact_sheets/defoliators/wm_id_man.html

Newly Hatched Caterpillars: Winter moth is a generalist feeder and has the potential for a rather wide host plant range. In general, however, winter moth caterpillars commonly feed upon all maples, oak, apple, crabapple, ash, fringetree and blueberry. This pest has been known to drop from trees and feed on perennials such as roses and others. There is evidence that winter moth caterpillars time their hatching from the egg closely to the time of bud-swell of the specific host plant that the eggs are on. This suspected phenomenon only occurs in larger stands that consist primarily of one type of tree (e.g. oaks or maple). It has not been observed in landscapes with mixed tree species. It is estimated that winter moth eggs hatch between 20-50 Growing Degree Days (base 50) in Massachusetts. Typically, this can occur anytime late March (during atypically warm springs) into the second or third week in April (cool springs). The tiny (less than 1 mm) caterpillars then spin a small silk strand and become air-buoyant and are carried upwards on air currents into the tree canopy where they then try to "weasel" between the bud scales, bracts, etc. to get into the buds. They do not chew their way in via an entrance hole. If buds are not yet swollen enough for them to gain access, these small larvae will then spin down from the tree on a silken thread and be carried away by the wind, which is a dispersal process known as ballooning.

This is the stage where high levels of injury to the host plant can occur. The longer that the buds stay swollen but unopened, there is a greater potential for feeding injury. Winter moths will enter both leaf and flower buds. For blueberry growers, this is the most critical stage of winter moth activity. If flower buds sustain heavy feeding, there will be no flowers and thus no fruit. There are no known controls for winter moth in this life stage.

Free-Feeding Caterpillars: Once the buds open, the larvae are known as "free-feeders" given that they are now on the foliage and free to move readily from one area to another. Winter moth will be in this stage until late May whereupon they drop to the soil and almost immediately spin a cocoon and pupate. While still on the host plant, however, they are exposed and very treatable with a variety of products.

Adult Winter Moths: Male winter moths have wings and are rather drab-colored moths. The hind edge of their wings is fringed with small hairs and the bottom row of dark banding near the tip of the wing appears as a series of hash marks. This becomes important when trying to separate them from male fall cankerworm moths which are active at the same time. The male Fall Cankerworm is similar to winter moth males but has a distinctive light colored patch near the distal end of the front wing on the leading edge. Adult female winter moths are said to be wingless but they actually have greatly reduced wings (brachypterous) and are smaller than the totally wingless (apterous) adult female Fall Cankerworm moths.

Males and female moths of both species emerge around Thanksgiving time and may continue to emerge well through December whenever milder temperatures prevail during that time period. The moths of both species are attracted to lights. Females of both species will orient on a vertical silhouette, such as a tree trunk, and race up it while emitting a sex pheromone to attract males of her species. Clouds of male winter moths can be seen flying around tree trunks, resting on the bark and mating with females at this time. Once mated, the female may continue scurrying up the tree and begins to lay eggs. Both males and females die soon after mating and egg deposition. Each female winter moth lays up to 150 eggs.

Eggs: Male and female winter moths emerge over a period of several weeks beginning in late November and continue through December. During this time period, the moths mate and the females lay eggs. Female winter moths lay their eggs primarily on the trunks and branches of their host plants. The tiny oval eggs first appear in late November and continue to appear through December as new female moths appear. Initially, these eggs are tiny and green in color. They will be scattered loosely along the bark, in bark furrows, under lichen, and out on the larger branches. After a short time period, the eggs turn a pinkish-orange color and thus are more visible. Just days before hatching in the spring, winter moth eggs will turn very dark in color.