

Forest Tent Caterpillar Phenology Monitoring Protocol – 2018

Developed by Vermont Forests, Parks and Recreation

May 2018

Background:

Forest tent caterpillars hatch in early spring and their development is closely tied to host plants, especially sugar maples. The caterpillars typically hatch just as the new leaves begin to grow and in some years, hatch before the buds of host trees have opened. They are exposed to changing weather and in some years late-season frosts destroy their food supply. The young caterpillars are adapted to feed within a narrow window, before chemical and physical changes make the foliage less palatable.

Bt is not a contact insecticide; caterpillars must eat sprayed leaves, after which they will stop feeding and die. **Ideal spray timing is after all eggs have hatched and started to feed, and when the leaves are fully expanded and large enough to catch spray droplets (at least 20% of full size).**

The timing of egg hatch, foliage development, onset of insect feeding, and timing of optimal Bt spraying will be weather dependent and may vary between sugarbushes where spray will be applied. Monitoring the stages of 1) insect emergence, and 2) foliage development at various locations is imperative for timing aerial application properly.

The Vermont Department of Forests, Parks and Recreation and cooperators are monitoring four locations in northern Vermont as sugar maple leaves emerge and will continue through leaf-out. ***Landowners are encouraged to monitor phenology on their own property to most precisely time Bt application.***

Materials and Methods:

- Tools and equipment needed:
 - Binoculars or spotting scope and tripod
 - Datasheets and pencils
 - Flagging
 - Pole pruner (optional)

Egg hatch can be monitored using reachable branches (“branch grab”), or by observing nearby egg masses. Locate 5 egg masses per site to monitor. Mark with flagging and assign a number for each egg mass (Egg Mass ID on the datasheet). Return weekly to the same egg masses and record one of the following stages of development for each egg mass:

- no hatch
- low hatch (less than ½ egg mass hatched)
- major hatch (more than ½ egg mass hatched).

Note: Caterpillars will be very small upon emergence.

Leaf development will be monitored by selecting five representative co-dominant or dominant sugar maple trees on site whose upper crowns are within view. Label/identify each tree (“Tree ID” on datasheet) and return to these same trees each week to most accurately depict the progression of leaf emergence from vegetative buds (not flower buds). The surveyor will use either binoculars (referred to

as “bins” on datasheet), or a spotting scope to track bud development – evaluating what the majority of the crown looks like rather than the most advanced branches. Categories of development include none, budbreak, small leaves, or fully expanded (see below):



None



Budbreak



Small leaves



Fully expanded

Note: all emerged leaves less than fully expanded qualify as “small leaves”

% Defoliation will be assessed for each of the same trees monitored for leaf development, in increments of 10%. These are estimates and should be interpreted as “% of entire crown defoliated”. We include this measure in order to give applicators a sense of how far along the feeding is, and to indicate the urgency of spraying.

Landowners are responsible for working with applicators to time spraying based on phenological observations, applicator availability, and weather conditions. VT FPR will post up-to-date assessments on the FPR website (<http://fpr.vermont.gov/node/1939>) of our 4 phenology sites (Barton, Eden, Highgate, Warren’s Gore) that will include the above data. However, ***the best and most accurate assessment for each landowner should be done on their respective properties.***

Feel free to contact us with questions about this method if anything is unclear:

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