Bruce Spanworm Egg Survey

Objective: To get an idea of Bruce spanworm population levels prior to spring larval surveys so that suppression planning can be done in advance. Moderate to high counts should be confirmed by spring larval surveys when spanworms are present on expanding sugar maple leaves.

Time of Year: December through April when eggs are orange in color.

Equipment needed: Magnifier to search for eggs and template for measuring a standard area each time. A 10x Optivisor is highly recommended over a hand-held magnifying glass. A small canning jar lid (2.15 inches - inside diameter) works well for a template.

Data Sheets Needed: Bruce Spanworm Egg Survey form.

Procedure: Randomly select pole-size sugar maple scattered throughout the sugarbush to be surveyed or section of concern. Place the template on the north side of the tree bole at a height between 3 and 6 feet above the ground. Examine the bark area within the template area and record the number of eggs seen. Do the same for the other four cardinal directions on the tree. Continue to survey in this manner until 30 trees have been examined. Divide total number of eggs by 30 to get average number of eggs per tree. Then divide by area surveyed per tree (0.10 sq. ft. for small canning jar lid) to get eggs per square feet.

Interpreting Results: This procedure should be considered preliminary since it has not been widely tested (has been tried on about a dozen Vermont sugarbushes). In the past, egg counts in excess of 10 per square foot have always resulted in moderate to heavy defoliation and fewer then 4 per square foot have always resulted in light defoliation. Counts between 4 and 10 per square foot have had variable defoliation results.

R. Kelley
9-4-96

Bruce Spanworm Egg Survey Date_____ Owner_____
Town_____ Remarks_____

Tree #	N	E	S	W	Total	Eggs/sq. ft.	Remarks
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
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17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Total							
Eggs/sq.ft							
Ave.							

BRUCE SPANWORM LARVAL SURVEY

OBJECTIVE:	To predict Bruce spanworm infestation levels in time to make control recommendations.
TIME OF YEAR:	Mid to late May when sugar maple leaves are not quite fully expanded and larvae are predominantly in the second instar.
EQUIPMENT NEEDED:	Pole pruners with attached basket or clamp for holding the sample branch. An alternative method is for two people to catch the falling branches in a large sheet.
DATA SHEETS NEEDED:	Bruce Spanworm Larval Survey Data Form. Sequential table for Bruce spanworm larvae.
PROCEDURE:	1. Walk along a longitudinal line that transects the stand from one corner to the other. 2. If the stand or sugarbush varies in elevation, start at an upper elevation since populations may be highest here. 3. Randomly sample trees over four inches dbh at every two-three chains along this line. 4. For each tree, clip 12 leaf clusters around the tree from a crown height of 30 to 40 feet and count the number of Bruce spanworm larvae per cluster. 5. After the first tree has been sampled, refer to the sequential table to determine whether you need to continue sampling. Continue sampling until the cumulative larval count falls within the light, moderate, or severe infestation level in the table. 6. If a decision cannot be met after sampling 10 trees, refer to the table and record the infestation level as either light-moderate or moderate-severe.
INTERPRETING RESULTS:	The sequential table (appendix 1) gives you the predicted infestation level based on average conditions. Since there are so many variables that affect insect populations, these predictions will occasionally be wrong. Underestimates of actual damage are more likely with building populations while overestimates are more likely with collapsing populations. Comments on the apparent health of the insects observed during the survey can be helpful in making a spray or no-spray decision when larval counts are borderline within the predicted infestation category.

Adapted from "Sequential sampling of the winter moth" by W. A. Reeks, Can. Ento. (6)241-246, 1956 and field tested for Bruce spanworm by P. Snowden and A. Avery in 1984.

3/88
RSK

BRUCE SPANWORM LARVAL SURVEY
DATA FORM

SURVEY CREW _____ DATE _____

OWNER _____ TOWN _____ COUNTY _____

PERCENT SUGAR MAPLE _____

COMMENTS _____

_____

TREE 1 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 2 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 3 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 4 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 5 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 6 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 7 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 8 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 9 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

TREE 10 Cluster 1_____ 2_____ 3_____ 4_____ 5_____

6_____ 7_____ 8_____ 9_____ 10_____ TREE TOTAL_____

APPENDIX 1

Cumulative Number of Bruce Spanworm Larvae Per Tree Sample

	Infestation Level				
Trees	Light	Light-moderate (continue sampling	Moderate	Moderate-severe (continue sampling	Severe
1	< 2	3-23	-	24-54	> 55
2	< 16	17-37	38-62	63-93	> 94
3	< 29	30-51	52-101	102-132	>133
4	< 43	44-64	65-140	141-171	>172
5	< 56	57-78	79-179	180-210	>211
6	< 69	70-91	92-218	219-248	>249
7	< 83	84-105	106-257	258-287	>288
8	< 96	97-118	119-296	297-325	>326
9	<110	111-132	133-335	336-365	>366
10	<123	124-145	146-374	375-404	>405

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27							
28							
29							
30							
Total							
Eggs/sq.ft							
Ave.							