

MESSAGE SCAN FOR KATHARINE SHEEHAN

(B2)
part Also in A2

To K.Sheehan

From: David R Bridgwater

Host: R06C

Postmark: Sep 20,93 7:42 AM

Delivered: Sep 20,93 7:42 AM

Status: Previously read

Subject: 88 Budworm

Comments:

Sorry, but these are the only two "surviving" 88 budworm reports that I have. There may be others in other fpm files.

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TOLLGATE SPRUCE BUDWORM PROJECT

ENTOMOLOGY REPORT

By

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Entomology Chief

Introduction

The Tollgate Project was split into two units, Tollgate South (bid item 6.1) and Tollgate North (bid item 6.2). This was done to take into account anticipated budworm population differences. In addition, the Starkey Unit was added to bid item 6.1. Each bid item was divided into spray blocks that were relatively homogeneous in terms of aspect and elevation.

Originally, it was anticipated that 28 people would be needed for the biological sampling. However, with the reduction of State and private lands, the needs were reduced. Twenty two crew members were hired and were with the project the first full week. Later, two people left to work at other jobs. Entomology crews were hired from the local commuting area through the local State Employment Office. Because the area had a warm, dry spring, entomology crews reported on May 9, with the anticipated start of sampling May 14, and the start of spraying May 29. However, cool weather during late May and early June retarded insect and tree development, and delayed the first block release until June 14 and initiation of spraying until June 15. During the first week, entomology crews were given first aid and defensive driving training, and project orientation prior to start of formal sampling.

Three types of sampling were conducted: 1) early larval density to qualify the units for treatment; 2) developmental sampling to determine the proper time for releasing blocks for treatment; and 3) post treatment larval density to determine whether the treatments reduced populations to the target level of an average of less than one larvae per 45 cm. branch tip.

The insecticide used on all three areas was Thuricide 32 LV applied at a rate of 16 Billion International Units in 64 ounces undiluted per acre. Application was made utilizing various size helicopters and electric rotary atomizers.

Methods

Early larval density sampling was conducted during bud burst on 48 plots in Tollgate North, 73 plots in Tollgate South, and 17 plots in Starkey. Plots consisted of three host trees, 20 to 30 feet tall, either Douglas-fir, true fir, or spruce, whichever made up the major component of the area. One 45 cm. branch tip was collected from the mid-crown of each tree using a pole pruner with an attached collecting basket. Each branch was placed in a labeled paper bag and returned to the lab for examination. In the lab, the number of buds, budworm larvae, and other lepidoptera larvae were recorded for each branch on

the early larval density data sheet and entered into the EDENSITY data file in the WESTBUDS program. To qualify for treatment a unit must have had an average of 4 (+ Or - the standard error) budworm larvae per branch tip.

Development sampling was conducted following bud burst on three plots per spray block to get a representative sample of the range in elevations and aspects in the block. A plot consisted of four host trees that represented the mix of species in the block. At each plot, one 45 cm. branch tip was clipped from the lower crown of each tree. The samples were examined in the field. Sample processing consisted of: (1) tally unfurled shoots and total shoots or opening buds; (2) process the branch through a beating box to dislodge all larvae onto a canvas tarp; and (3) examine and tally all spruce budworm larvae by instar. If 25 larvae were not collected on the four branches, additional branches from additional trees were sampled until at least 25 larvae were collected. The data was put on the development data sheet and later entered into the DEVELOP data file in WESTBUDS. If it appeared the the release criteria of less than 15% of the larvae were second and third instars, and 95% of the shoots had unfurled, the data was called into the office over the radio system allowing for earlier block releases.

Post-spray density sampling was conducted at the same sites that were sampled for early larval density. Again, three open-grown 20 to 30 foot trees had two 45 cm. mid-crown branch tips pruned using a pole pruner and collecting basket. The species of trees selected were the same as the predominate host type. The post-treatment evaluation sample was read in the field at time of collection. Each branch was processed in a beating box and a tally made of all budworm larvae, pupae and pupae exuviae. This, with a tally of the number of shoots and any other lepidoptera larvae, was entered on the evaluation data sheet and later entered into the LDENSITY data file in WESTBUDS.

Results

Early larval density was as follows:

Tollgate North	7.67 ± 1.33
Tollgate South	6.76 ± 0.83
Starkey	6.50 ± 1.37

Post-treatment density was as follows:

Tollgate North	.68 ± .15
Tollgate South	.55 ± .09
Starkey	1.42 ± .39

Discussion

All three areas met the qualification level of 4 larvae per branch tip. These numbers do not represent the prespray population density in the treatment area. The samples were taken early and all of the larvae may not have migrated from their overwintering sites.

Having the sampling crews do the development sampling in the field paid many dividends. Releases could be made the morning of sampling which allowed operations to do a reconnaissance of the block the same day and allow treatment the following day. In addition "lab burnout" was avoided. In future projects, the need for extensive lab space may be reduced. Local hires were easy to train in instar determination, and it gave them a little more feeling of being part of the total picture.

Most spray blocks were treated the day following release. The first block was treated on June 15th, and the last block completed was on July 1st. Only one spray block out of 62 needed to be resampled because it had not been sprayed within 72 hours. No blocks were dropped because of pupation. All blocks were treated prior to any pupae being found.

Good results were obtained on the Tollgate North and Tollgate South Units. Most of the areas were well treated. Some sample plots were skipped or missed, but this is to be expected.

The results on Starkey are not quite as good. Two plots with high population counts that are obvious skips. Excluding these two plots, overall, the Starkey Unit was well treated and populations greatly reduced.

1988 WESTERN SPRUCE BUDWORM SUPPRESSION PROJECT

SUMMARY TABLE FOR OPERATIONAL ANALYSIS UNITS REGION 6

ANALYSIS UNIT	ACRES	INSECTICIDE	OZ/ACRE BIU/ACRE	NO. OF PLOTS	POST-TREATMENT DENSITY
Barlow	115,034	Dipel 6L	42.7	16	0.35 ± 0.05
Barlow	25,225	Thuricide 32IV	64	38	0.71 ± 0.35
Warm Springs	186,468	Thuricide 32IV	64	58	0.57 ± 0.08
Dalles	116,418	Thuricide 32IV	64	79	2.40 ± 0.36
Tollgate	103,769	Thuricide 32IV	64	121	0.60 ± 0.08
Starkey	2,894	Thuricide 32IV	64	17	1.42 ± 0.38
Meacham	11,115	Thuricide 48IV	42.7	23	2.08 ± 0.44
Meacham	8,028	Dipel 6AF	42.7	16	0.97 ± 0.16

SUMMARY TABLE FOR 1988 MEACHAM PILOT PROJECT
REGION 6

ANALYSIS UNIT	ACRES	INSECTICIDE	OZ/ACRE	PRE-TREATMENT DENSITY	POST-TREATMENT DENSITY	PERCENT MORTALITY
Meacham	20,268	Dipel 6AF	42.7	17.84 ± 0.86	2.17 ± 0.25	87.8
Meacham	18,297	Thuricide 48LV	42.7	19.36 ± 0.91	0.84 ± 0.20	95.7
Meacham	17,358	Untreated	N/A	17.33 ± 1.10	7.93 ± 0.50	54.2

SUMMARY TABLE FOR 1988 MT. HOOD SPECIAL PROJECT
REGION 6

ANALYSIS UNIT	ACRES	INSECTICIDE	OZ/ACRE	PRE-TREATMENT DENSITY	POST-TREATMENT DENSITY	PERCENT MORTALITY
Warm Springs	8,645	Thuricide 32LV	64	4.68 ± 0.41	0.27 ± 0.06	94.2
Barlow	6,108	Dipel 6L ¹	42.7	9.19 ± 0.99	0.87 ± 0.10	90.5
Barlow	3,616	Untreated ¹	N/A	1.01 ± 0.27	0.17 ± 0.10	83.2

¹Populations had nearly collapsed in the one untreated block from which these samples were taken.

Tollgate above is combined. Tollgate North was .68 ± .15 and Tollgate South .55 ± .09 Starkey would have made it but for two high plots (not) sprayed on the second day.

meacham - wild by ac. sprayed ~~pre~~ ^{post} ~~pre~~ ^{post} report
 Dipel 1.83 ± .22
 Thur. 1.43 ± .266

Barlow - Dipel - .376 ± .052