

THE EFFECT OF COMMERCIAL BACILLUS
THURINGIENSIS PREPARATIONS ON JACK-
PINE BUDWORM, CHORISTONEURA PINUS

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The Effect of Commercial *Bacillus Thuringiensis*
Preparations on Jackpine Budworm, *Choristoneura Pinus*

Jackpine budworm, *Choristoneura pinus*, has in the past four years achieved very high population densities in northern Ontario, and is threatening the survival of major stands of mature jackpine (Howse G. personal comm.). In the fall of 1984 egg mass counts suggested an explosive expansion of the infestation, and extensive spraying to limit defoliation was projected. Only fenitrothion was registered for control of this insect. In an effort to develop data to allow registration of *Bacillus thuringiensis* (Bt) for such control efforts, diet bioassays and foliar assays were conducted in the spring of 1985. No data on the susceptibility of this insect to Bt was available but because this insect is so closely related to spruce budworm, *C. fumiferana*, it was anticipated that it would be similarly susceptible.

Branches infested with hibernating larvae of jackpine budworm were collected in the fall of 1984 near Espanola, Ontario and placed in cold storage. Emergence was stimulated by bringing the branches to room temperature and collecting the emerged larvae, which were then placed on artificial spruce budworm diet. When larvae reached the appropriate age, they were transferred to diet free of antibiotic and containing Bt (HD-1-S1980, the North American standard) (50 larvae/dose) in concentrations equal to those used for spruce budworm. Mortality was assessed on day 7 and day 12 of the assay as for spruce budworm. In the first assay late IIIrd instar and early IVth instar were transferred to diet containing Bt. About 17% mortality was recorded in controls. This was

trols were unsprayed. At this stage larvae wander a great deal and not all larvae were recovered. Larvae spun feeding niches at the base of the needle and chewed on both the stem and the base of the needle, often severing the stem. Severed needles often remained hanging in the webbing.

FOLIAR BIOASSAY

TREATMENT	# LARVAE	% DEFOLIATION	% MORTALITY	SURVIVOR WT. (MG)
UNSPRAYED	35	55	9	41
0.8 DROPS/NEEDLE	70	13	97	4.4
3.8 DROPS/NEEDLE	15	10	100	---

Photographs taken on day 12 of a control shoot and one with 0.8 drops/needle are shown in figures 1 and 2 respectively.

The deposit in the foliar assay approximated that which could be reasonably expected from an aerial spray as conducted for spruce budworm. Thus both the diet bioassays and the foliar assay indicate the *C. pinus* is about as susceptible to Bt as is spruce budworm. On the basis of the results of these assays it appears likely that aerial sprays of Bt at a concentration of 48BIU/gal conducted as for spruce budworm will yield approximately equivalent foliage protection.

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