THE WESTERN SPRUCE BUDWORM STRIKES AGAIN!

The western spruce budworm, *Choristoneura occidentalis* Freeman, a native Oregon insect, became epidemic this year in eastern Oregon. The state now faces the prospect of a spray program in the late spring of 1982.

The western spruce budworm has been termed the most destructive forest defoliator in Western North American (Furniss and Carolin, 1977). It occurs principally on Douglas-fir and the true firs in the Pacific Coast States, British Columbia and the Rocky Mountain States. Sustained, heavy attack causes nearly complete defoliation in 4 to 5 years: epidemics cause decreased growth, tree deformity, top killing and ultimate death of trees on extensive areas.

The budworm has a history of cyclic occurrence in Oregon. It was the object of attack via spraying from 1949-1958 when over 4 million acres were sprayed in a successful control program in eastern Oregon.

Principal damage is caused by the larval stage of the insect. In the spring, larvae mine old needles until buds swell, then they bore into the buds and feed upon the expanding needles. Later, they loosely web the growing tips and feed upon the new needles. (See Figures 1-4).

**Figure 1. Eggs & Young Larvae:**
A) The budworm lays its egg masses on the outside of the needles, overlapping them like shingles, in late summer (July-August). In about 10 days, they hatch. The newly hatched larvae are light green with brown heads; they do not feed, but spin silken shelters among lichens and under bud scales where they hibernate until spring.

B) Actual size of the egg masses can be seen in this photo
FIGURE 2. Mature Larvae - In the spring, the larvae mine old needles until the buds swell, then they damage the new buds and new needles. The full-grown larvae are 25 to 32 mm long with brownish head and body and prominent ivory-colored spots.

FIGURE 3. The mature larvae loosely web the growing tips and feed upon the new needles. The spruce budworm can be seen in the center of the photo.

FIGURE 4. In late summer after pupation, the mature adults emerge and lay eggs to complete the life cycle. The adults are predominantly mottled orange brown with a wingspread of 22-23 mm. Chemical control is resorted to when natural checks (parasites, predators, adverse weather and starvation) fail. Prior to initiating a chemical control spray program, the situation and need is carefully documented. The agencies involved are now making assessments.

Of the 306,000 acres now infested, about 150,000 acres may be sprayed if conditions remain unchanged. About half of the infested area being considered for spraying is Federal land, the remainder is private land. The insecticide of choice, because of its reliability, is Sevin 4-oil. Other options include Malathion, Orthene and a spore-forming bacteria, Bacillus thuringensis. In western Oregon, the western spruce budworm is usually present and can be locally damaging; however, it has rarely been present in epidemic numbers in western Oregon.

Any of the insecticides previously listed may be used on shade, nursery or Christmas trees infested with western spruce budworm. The bacteria, Bacillus thuringensis, is least hazardous, but all are of low toxicity. Good coverage is important and timing is critical: spraying should be done in the spring when the first flush of new growth occurs and the larvae are exposed while feeding on needles.

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