



## BALSAM SHOOTBORING SAWFLY *Pleroneura brunneicornis* (Rowher)

Insect and Disease Laboratory • 168 State House Station • 50 Hospital Street • Augusta, Maine • 04333-0168

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### Symptoms and Damage

Newly expanding fir shoots develop a flattened appearance at their tips, or "button," as though they were pushed against a flat glass surface. Subsequently they turn brown and die. The symptoms are somewhat similar to frost damage but the stem has become hollow due to larval feeding. A yellowish-white larva can often be seen within the hollow tips when checked in May. While this damage has no lasting effect on the health of trees the resulting bud loss may cause holes in tree crowns. It is a problem only in Christmas tree plantations or on wild trees used for "tipping" where aesthetics are of primary concern. Fraser fir is often more severely affected than balsam fir. Infestation of Fraser fir may result in entire shoot mortality whereas balsam fir damage may be limited to shoot tips. Fraser fir buds break later than balsam fir allowing the larvae to feed on the unexpanded shoot for a greater length of time resulting in more extensive damage. Late flushing selections of balsam fir are often more severely affected than earlier flushers. In very rare instances this insect appears in high numbers over widespread areas and causes a significant amount of damage to Christmas trees.

### Hosts

Balsam and Fraser fir.

### Life Cycle and Habits

Adults begin emerging from the soil by the end of April and are active through May in most years (in 1998 adults were first seen April 16th). Females lay eggs through the resinous bud cap or on needle clusters after bud scale drop. There is no observable indication that eggs have been laid on the buds. The larvae hatch and begin feeding, moving first towards the bud tip and then boring back towards the shoot base. The larvae molt four times while feeding then drop to the ground in early June. There they spin a thin cocoon within an earthen cell and spend at least one winter before pupating and emerging as adults in the spring. Populations tend to be heavier in even numbered years indicating that this insect may have a two year life cycle spending an entire year in the ground.

### Control\*

This is a difficult insect to control as the eggs and larvae of the balsam shootboring sawfly are protected within the buds and larvae and pupae by the soil. The only exposed stage of the sawfly is the adult in early spring. Protecting trees from flying adults is a difficult process and may require multiple pesticide applications to get the right timing. Growers with serious, recurring problems may want to consider trials of chlorpyrifos, sprayed three times in the two weeks prior to normal balsam twig aphid spray dates. Once damaged buds have been observed it is too late to apply effective control measures. Soil applications of pesticides against this insect have not been tested and are discouraged at this time.

**\*NOTE:** These recommendations are not a substitute for pesticide labeling. Read the label before applying any pesticide. Pesticide recommendations are contingent on continued EPA and Maine Board of Pesticides Control registration and are subject to change.

### Caution

For your own protection and that of the environment, apply the pesticide only in strict accordance with label directions and precautions.