Oregon State University Extension
Urban Entomology Notes
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European Pine Shoot Moth

biology and control information for growers & homeowners

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European Pine Shoot Moth

European pine shoot moth (*Rhyacionia buoliana*) is an important pest of pines. It was originally imported on nursery stock from central Europe around 1914. The moth moved westward from Long Island, New York and by the early 1950's was widespread in North America.

Damage is done by larvae ("worms") that bore in shoot and bud tissue. Attacks frequently occur in young trees. Killed terminals cause bushy growth that may render nursery plants unmarketable or landscape plants unattractive.

All pines are attacked but 2-needle pines such as lodgepole, mugo and Scotch pine appear to be especially susceptable in western Oregon. Pines also may differ in their ability to recover from damage by this insect.

EPSM larva on hollowed bud

A certification program, run by the Oregon Department of Agriculture's Nursery Inspection Program, is available for European pine shoot moth. Check out the following web site.

http://www.oda.state.or.us/Plant/PLANTINFO.html

Managing EPSM in commercial plantings is particularly important because some western states enforce quarantines against importation of infested stock. Check with your department of agriculture for up-to-date information about state rgulations.

Adults emerge in early summer. The exact date depends on spring temperatures. Warm spring temperatures permit an earlier emergence whereas a relatively cool spring delays the emergence flight. A temperature-based phenology has been developed for western Oregon[1] that helps predict when moths will emerge. Moths are active around sunset but usually don't fly during cool or wet days. Air temperatures below 55°F inhibit flight.

[1] Regan, R., J.D. DeAngelis and G. Gredler. 1991. Predicting seasonal flight of European pine shoot moth (Lepidoptera: Tortricidae) in western Oregon. Environ. Entomol. 20:1403-1406.

Adult EPSM

Female moths lay eggs on host pines that may be scattered over a large area. In other words, EPSM is a relatively strong flier and can therefore effectively disperse its eggs. Eggs hatch in one to two weeks at which time the new larvae begin feeding. Needles are mined first then buds. Larvae spend the winter under a resin/silk shelter or in buds.

The following spring larvae migrate upward and feed on new buds or expanding shoots. Developing shoots are tunnelled and killed. Pupation (the change from larva to adult) occurs in shoots and takes two to three weeks in late spring. There is only one generation per year.

Pupa encased in damaged shoot

There are three points in the life cycle of EPSM when insecticides can be effective — migrating larvae (early spring), adults (early summer) and newly hatched larvae (early summer). Accurate timing of insecticide application is critical for satisfactory control. In recent years some success has been achieved with summer applications targeted at adults and young larvae. These applications can be timed with help from a phenology model[1] developed for western Oregon and/or pheromone traps[2]. Begin spraying when adults are detected or when the phenology model predicts 10% flight. Moth activity lasts about 4 weeks.

The table at right lists some insecticides registered (US EPA registration for western Oregon, 1999) for use against EPSM. Dimilin is a growth regulator and therefore effective only against larvae. The only label that specifically lists EPSM is Imidan. Other labels are valid because of site use allowance.

Natural enemies play an important role as well in managing EPSM. Over 100 parasites and predators have been identified worldwide. While we do not yet know how effective these natural control agents are in western Oregon, care should be taken not to disrupt them through careless or ill-timed insecticide applications.

Larva excavated from shoot

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[2]Pheromone traps can be obtained through your department of agriculture. These traps contain a synthetic chemical that attracts male moths to a sticky surface where they are trapped and counted.

Things to Consider

♦Certification of pine nursery stock and Christmas trees is required for some western states. Contact your state department of agriculture for more information.

♦Concentrate control efforts on adult moths and newly hatched larvae. Use pheromone traps or a phenology model to time applications.

Foliar Insecticides

Topcide O/S (Uniroyal)
Dimilin 25W (Uniroyal)
Talstar (FMC)
Astro (FMC)
Conserve SC (DowElanco)
Dursban (DowElanco)
Imidan 70-W (Gowan)

Always check the label first! The label is the final word on what does and does not constitute a safe and legal application.