A SYNOPSIS OF SOME OF THE MORE IMPORTANT INSECT ENEMIES OF CONIFEROUS NURSERY STOCK IN OREGON

by

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I - Strawberry root weevil:

1. Although called strawberry root-weevils, there are cases where a few grubs have developed and destroyed thousands of one-year old stock in nurseries. It has become quite serious in recent years.

   A. Eggs deposited in soil during June and July, grubs maturing by fall. Adults overwinter in soil and appear the following spring.

2. Control: Experiments for control of this root-weevil in nurseries have not been conducted, but the following formula is successful for strawberries:

   Dried apple peelings ---- 95 pounds
   Sodium fluosilicate or calcium arsenate ---- 5 pounds

   A. Another bait:

   Bran ---- 50 pounds
   Water ---- 5 gallons
   Sugar ---- 10 pounds
   Calcium arsenate or sodium fluosilicate ---- 5 pounds

   a. Apply the bait by placing tablespoonful at one-foot intervals, applying bait about April 1.

II - Bark weevils:

1. Small beetle with long snout, working similarly to bark beetle larvae.

   A. Adult weevil digs pits in tree to deposit eggs. First evidence of attack will be number of small pits. As larvae work out, the bark becomes soggy, shrinks, and cracks. Small weevils in twigs and branches are apparently becoming more abundant.

2. Control:

   A. If there is one or two attacks, the bark may be cut away and wound painted. If in twigs, all showing failing foliage should be cut and burned.
B. If there are heavy attacks, remove entire plant and burn it.

III - Tip moths and twig miners:

1. Small moths, caterpillars of which mine tips and twigs of ornamentals.
   A. The cedar tip miner frequently found in the cedar group of coniferous trees.
   B. Tips die, turn brown, break off, and there is webbing of scales and tips.
      a. There frequently are two broods per year.
      b. Cut and burn infested twigs.

IV - Round-headed borers; Long-horned beetles; Flat-headed borers -- Metallic wood-borers.

1. Although not similar in appearance, these insects operate similarly.
   A. Eggs are deposited on the bark, the worms then bore through to cambium, live for a time before entering wood to complete life cycle.
      a. Time for life cycle is one to several years.
   2. Trees attacked generally in poor condition, suffering from lack of water, winter freeze, sun scald, poor drainage, or ravages of other insects.

3. Control:
   A. Remove plant and burn if badly infected. Larvae may be cut cut and destroyed.

V - Bark beetles:

1. Small, cylindrical insect that bores under bark of trees and shrubs, especially coniferous species.
   A. Eggs laid in these cavities, grubs operating in cambium layer.

2. Control:
   A. Remove entire plant and burn. Healthy trees seldom attacked. Enough insects will develop in one plant to kill 25 plants of same size.

VI - Scale insects on conifers:

1. Common species on coniferous nursery stock in Oregon:
   A. Juniper scale
   B. California pine leaf scale
   C. Greedy scale
   D. Pine leaf scale
2. Control:
   A. Application of spray materials either upon scale covering itself or between the time eggs have hatched and time when young begin settling on plant. Best to apply spray when new growth starts.
   
   B. Sprays:
      a. Miscible oil 1 gallon to 30 gallons water.
      b. Lime sulfur 1 gallon to 7 gallons water.
         (1) Summer applications of lime sulfur 1 gallon to 50 gallons water.
      c. Either of these sprays will leave a discoloration lasting 1 to 5 months.

VII - Shot hole borer:
1. Similar in appearance to bark beetle but shot hole borer bores directly into tree, raising brood after brood in same wood.
   
   A. Moist, sour sap condition in wood required for borer; fungi developed thereby for larvae.
   
   B. Attack by shot hole borer indicates plant in poor health.
2. Control:
   A. Healthy trees seldom attacked; therefore, cut out infected trees, burning them.
      a. Hosts include most ornamental fruits and shade trees except conifers.
      b. Conifers attacked by other species but attacks do not generally occur in the nursery.

VIII - Oak looper - Carpenter moth - Douglas fir webworm:
1. Pests primarily of wood lots, shade and street trees. Seldom in nursery.

IX - Douglas fir chermes or spruce gall aphis
1. Similar to plant lice, requiring two years for life cycle.
   A. Requires two species coniferous hosts.
      a. Primary host of spruce upon which cone-like galls are formed.
      b. Douglas fir is other host upon which pest occurs as small masses pure white wax-like threads similar to cotton. Eggs under this covering, generally in April.
      c. Damage to fir not serious here. Damage to spruce severe as the galls deform the growing tips.
2. Control:

A. Applications may be made from October to April 1.

a. One pint nicotine sulfate, 3 pounds soap, 100 gallons water.

b. 10 pounds fish oil or laundry soap, 100 gallons of water.

c. Miscible oil, diluted according to manufacturer's directions.

d. 2 per cent nicotine dust has given good control in some cases.