

Unit B: Tree Growth and Development



Lesson 3: Identifying Diseases and Pests of Forest Trees

Terms

- Bark borers
- Biological controls
- Chemical controls
- Defoliators
- Management controls
- Parasite
- Pathogen
- Root feeders
- Sap suckers
- Tip feeders
- Wood borers

What Are The Major Categories Of Insect Pests Of Forest Trees?

- One of, if not the most deadly, pests of forest trees are insects.
- Some insects are pests to all kinds of trees, while other only affect certain species.
- Insects can cause damage to trees in a variety of ways.

Bark Borers

- As the name suggests, bark borers are insects that attack trees by tunneling underneath the bark.
- The soft cambium and newly produced wood and bark cells are destroyed.
- This effectively girdles the tree cutting off the supply of nutrients.

Bark Borers

- In addition, the damage caused by bark borers often provides an entry point for diseases and other pests to attack the tree.
- One of the most common insects of this type is the Pine Bark Beetle.

Pine Bark Beetle



Defoliators

- This type of insect causes damage to the tree by feeding on the leaves, needles, or fruit of the plant.
- In most cases, insect larvae, instead of the adults, do damage.

Defoliators



Gypsy Moth



Oriental fruit moth



Navel orange worm

Wood Borers

- Insects in this category eat their way through the sapwood and heartwood of the tree.
- This damage causes the wood to weaken.
- The most well known insect in this category is the termite.

Wood borers



Ash Borer



Termite



Peach Tree Borer

Tip Feeders

- Insects that attack young twigs, stems, or buds are known as tip feeders.
- These insects attack the most tender parts of the tree.

Sap Suckers

- These insects are equipped with penetrating mouthparts that allow them to feed on tree sap.
- These insects rarely cause the tree to die, however, trees are weakened and growth is slowed.
- Common examples of sap suckers are aphids and scales.

Root Feeders

- Root feeders are insects in the soil around the tree that feed on the tree's roots.
- These insects cause the most damage to tree seedlings.
- Examples of this category are white grubs and wireworms.

What Are The Major Categories Of Disease Problems Of Forest Trees?

- Diseases are most often caused by parasites.
- A parasite is an organism that relies on other organism for their food.
- These parasite organisms can be classified into five major categories: fungi, bacteria, nematodes, viruses, and mistletoes.

Fungus

- Of the five major categories of parasite organisms listed above, fungi are the cause of the most important diseases that affect forest trees.
- Whereas, fungi reproduce and spread by tiny spores, they can multiply very quickly.

Fungus

- Fungus diseases can attack any part of the tree.
- Afghan Pine is susceptible to the disease called Diplodia pinea.

Fungus

- Stem diseases are generally considered the most dangerous as far as causing death to the tree.

Fungus

- Leaf and root diseases generally do not kill the tree, just weaken the plant and slow down its growth.
- Examples of a stem diseases are Dutch elm disease, chestnut blight, fusiform rust, heart rot, Brown rot, and Shot hole

Fungus Damage



What Are Some Management Techniques That Can Be Employed To Control Insect And Disease Pests In Forest Trees?

- The key to a healthy forest is good forest management.
- In the controlling of insect and disease pests, there are several alternatives a forest manager has to choose from.

Controlling Insects

- In controlling the negative effects of insects on forest trees, there are three basic types of controls.
- They are: Biological Controls, Management Controls, and Chemical Controls

Biological Control

- Natural controls for most insect pest exist in nature.
- However, these natural controls are slow.
- Whenever foresters alter these natural controls to manage insect pests, they become biological controls.

Biological Controls

- Every insect has a natural enemy.
 - An example of a biological control would be the introduction of a new predator of an insect pest into the infected area.
 - Another example is the introduction of a pathogen.
 - A pathogen is any disease-causing organism.
 - The pathogen that attacks the specific insect pest may be available and can be introduced into the insect population.

Management Controls

- These controls consist of various management practices that the forester can employ.
- These would include the removal of infested trees and tree parts, the use of insect resistant tree varieties, maintaining proper tree populations, and prescribed burns.

Chemical Controls

- The use of pesticides on forest trees is regulated by the National Environmental Protection Agency (NEPA).
- Pesticides offer a quick and effective short-term solution to insect pests; however, often other control measures need to be used for long-term forest management

Disease Control

- The most effective control of forest disease is good management by the forester.
- Many kinds of diseases can be prevented from entering a forest by dusting the stumps of cut trees with borax or creosote.

Disease Control

- By removing damaged trees from the forest, the likelihood of disease infestation is reduced.
- In most cases, once a tree becomes diseased, little can be done.
- Therefore, prevention is the answer to a healthy forest.

Review / Summary

- What are the major categories of insect pests of forest trees?
- What are the major categories of disease problems of forest trees?
- What are some management techniques that can be employed to control insect and disease pests in forest trees?