

# 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



Navel orange worm



Oriental fruit moth



# 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?