

4-H Virtual Forest User's Guide

Trees: The Renewable Resource

Concept

This module will illustrate the concept of trees as a renewable resource. Students will also explore good forest stewardship practices to ensure that trees remain a renewable and sustainable resource. There are two learning objectives: 1) trees are a renewable natural resource, and 2) good forest stewardship practices.

This module supports the following Science SOLs:

Living Systems and Processes

- 3.5 a) ecosystems are made of living and nonliving components of the environment; and
- 3.5 b) relationships exist among organisms in an ecosystem.
- 4.3 a) interrelationships exist in populations, communities, and ecosystems;
- 4.3 b) food webs show the flow of energy within an ecosystem;
- 4.3 c) changes in an organism's niche and habitat may occur at various stages in its life cycle

Earth Resources

- 4.8 d) forests, soil, and land
- 5.9 a) some sources of energy are considered renewable and others are not
- 6.9 a) natural resources are important to protect and maintain
- 6.9 b) renewable and nonrenewable resources can be managed

Module Description

Begin. The module opens with an introductory frame containing images of a forester and three trees. Text reads as follows:

“A natural resource is something obtained from nature that is useful to humans. Trees, minerals, coal, fish, and oil are all natural resources.

Some resources, such as trees and fish, are renewable – meaning we can sustain them indefinitely with good management. In contrast, once we deplete non-renewable resources, like coal, minerals, and oil, they're gone forever.”

Forest Regeneration. This frame illustrates why trees are renewable. In this frame we see a tree stump and three types of forest regeneration: stump sprouts, a natural seedling, and a planted seedling. Text reads as follows:

“Trees are a renewable resource because they grow back after they are harvested, a process known as regeneration. Hardwood trees mainly regenerate from stump sprouts and seeds present in the soil, but they may occasionally be planted. Pine trees are usually planted, but also grow well from seed.

4-H members plant seedlings! Ask your teacher or 4-H volunteer leader about the 4-H Growing Kids & Trees Project.”

“Tap the sprouts or seedlings below to see them grow!”

Clicking or tapping one of the highlighted seedlings plays an animation of their growth. The growth is in proportion to how trees from these different sources and species would grow in nature. Hardwood stump sprouts grow fastest because they benefit from nutrients contained in the root system of the parent tree. Extensive root systems can extract water and nutrients from the soil just as a big tree would do. Hardwood and pine seedlings grow at a slower rate, because they must establish their own root systems.

Forest Stewardship. This frame introduces the concept of forest stewardship. Forest stewardship involves managing forests to ensure they meet our current needs while preserving them for future generations. This approach provides a sustainable source of products and ecological benefits.

Stewardship Concepts. This section illustrates a working forest landscape and eight forest stewardship concepts. Red icons allow the student to click on eight different features to learn more about good forest stewardship. Each resulting pop-up contains a few sentences that describe activities forest landowners can perform to make sure trees remain a renewable, sustainable resource.

Fence Livestock. Cattle are a renewable resource, and farmers often let their cows wander into the woods for shade. However, cattle can harm hardwood forests by eating seedlings, compacting the soil, and damaging tree roots with their hooves. It's important to fence them out of the woods if you want to grow hardwood trees. Additionally, many woodland plants are poisonous to cattle.

Our Responsibility. Humans have relied on forests for thousands of years to fuel fires for warmth, build homes, and create useful products. With good forest stewardship, we will be able to rely on forests for thousands more years.

Timber Harvesting. Trees, like all living beings, have life cycles. Thoughtful harvesting removes trees that have reached the end of their life, ensuring that a forest remains vibrant. It's important to avoid harmful practices like high grading, where the best trees are harvested, leaving poor-quality trees behind.

Water Quality. Forested buffer zones protect streams by keeping the water cool and trapping sediment chemical runoff from nearby land disturbances before it can reach the water.

Wildlife Habitat. Different stages of forest growth provide habitats for various wildlife species. Ensuring a mix of timber ages and types creates vibrant, thriving ecosystems.

Forest Products. Products such as notebook paper, playing cards, lumber for building homes, pencils, books, furniture and many others are made from trees.

Recreation. We use trails in the woods for wildlife watching, walking, hiking, hunting, and bicycling. Many of these trails were created during forest harvesting operations. Ditches and grass seed are used to prevent erosion on these trails after work is completed.

Professional Assistance. A trained forester will help landowners manage their forests and achieve their goals.