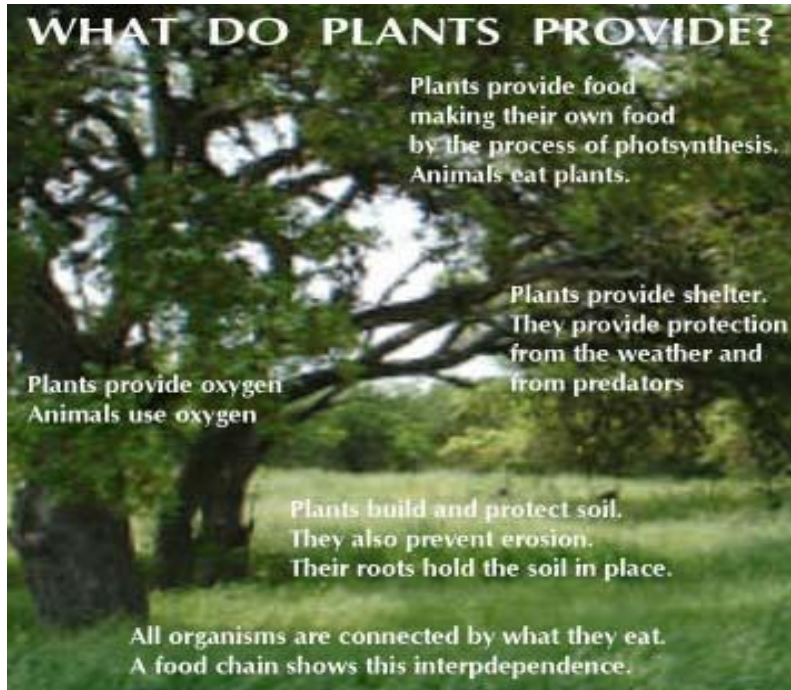


## Role of Plants

### The Role of Plants in the Environment

Plants are necessary for all life on Earth. Plants provide many things for the sustainability of life on our planet. Vegetation is classified into 4 categories: forest, tundra, barren and agriculture.











As a critical part of the ecosystem, plants provide **oxygen** for organisms to survive. They are able to **reduce the problem of pollution**, by using carbon dioxide. Plants are also the basis of most food webs as **producers of food** for herbivores and ultimately carnivores. Plants also provide **shelter** for animals, **clean and filter water** and help **prevent soil erosion**.

## Uses of Plants

### Plants for Food

Nearly 75% of the world's food supply is based on seven major crops: wheat, rice, maize (corn), potatoes, barley, cassava and sorghum.

Cocoa	Canola	Seaweed	Sugar
Chocolate is made from the fruit of the cocoa tree	78% of vegetable oil production is from canola	contains iodine and is used in soup broths and sushi	half of the world's sugar comes from sugar beets, located in the sugar beets' roots
			
Cocoa beans are roasted, shelled and then crushed. Cocoa butter and cocoa powder are separated. Cocoa powder is then mixed with milk to make chocolate.	Canola is pressed from the canola seeds and used as salad oil and frying oil	other products from seaweed include: ice cream, chocolate milk, yogurt, whipped cream, pies, jellies and candies	roots are shredded, heated in running water and the concentrated clear liquid crystallizes to produce sugar similar to sugar cane
It is used to make margarine, shortening, baked goods, potato chips and french fries	seaweed products are often used to thicken food (alginate, agar, carrageenan)		
			

People use plants for things other than food.

## ***Plants for Fiber***

Plants also provide fiber, which is the tissue of plants from the stem, leaves, seeds or roots. Plants provide fibers for clothing, paper and shelter. The aboriginal people from the west coast wove cloth from the bark of the western red cedar tree. Much of our clothing today comes from synthetic (manufactured) material, such as polyester and nylon. Natural fibers also provide resources for cloth:

- **Cotton** - is a natural fiber that absorbs moisture and then allows it to evaporate easily, making it the world's most important non-edible plant. The cotton fibers come from the plant's seeds. The silky fibers are strong, flexible and have a gradual spiral that causes the strands to interlock when twisted, making them ideal for spinning into thread. The second layer of fibers are shorter and are 'fuzzy' - they are used to make cotton batting, rayon and various types of plastic and paper.
- **Hemp** - Early makers of jeans used hemp, which is the oldest cultivated fiber plant in the world. Other products included the Bible, sails and ropes. Hemp has a less negative effect on the environment, because it uses less land area than trees, can be harvested in a year, lasts longer than paper, can be recycled up to seven times, chokes out weeds naturally and is not prone to insect pests.
- **Flax** - is a food and fiber crop. The flax fibers, which are smooth and straight, are taken from the stem of the plant are two to three times stronger than cotton fibers. Flax fiber is used for making linen paper, linseed oil - which is used as a drying oil in paints and varnish - and in products such as linoleum and printing inks.

## ***Plants for Medicine***

An apple a day keeps the doctor away! Many medicines (over 7000) contain ingredients made from plants. Herbal remedies are a common example of how plants are used to prevent illness. Plant medicines include:

- tea (made from [ginger root](#)) - is used to soothe an upset stomach
- tea (made from [white spruce and hemlock](#)) to prevent scurvy
- [white willow bark](#) - is used to ease pain
- [kinnikinnick](#) (buffalo berry) was used to treat kidney problems
- [opium poppy's seed pod](#) - thick milky fluid provides a powerful pain medication - morphine
- codeine is also found in the [poppy](#) - it is used in cough medicines
- quinine - which comes from the [cinchona tree](#) - is used to prevent malaria.

## ***Plants for Transportation and Construction***

Rubber is one of the most important plant products that people use. Natural rubber comes from the [Brazilian rubber tree](#). Synthetic rubber is made from coal and oil by-products - but natural rubber is also an important ingredient. Canoes were carved from trees by Aboriginal people. Lubricants are provided from [coconut and castor bean oils](#).

The construction industry in North America uses wood ([softwood lumber](#)) as a building material.

## ***Plants for Fuel***

[Wood or coal](#) (a fossil fuel) is used to heat homes. Sugar can be turned into ethanol and wood can provide methanol (wood alcohol). Fuel from plants is economical, but not energy efficient, because a large amount of energy is needed to grow the plants and a lot of the energy is lost when it is converted to fuel.

We must make sure that our [living resources](#) survive and thrive, in order to have them in the future.

## Managing Living Resources

**Living resources** are living things that can be used for human needs. Managing living resources involves maintaining healthy populations of all living things that make up those resources.

**Agriculture** is a major industry in the **United States** and the country is a net exporter of food. In 2007, there were 2.2 million farms, covering an area of 922 million acres (373 million hectares), an average of 418 acres (170 hectares) per farm. Major Crops in the United States include: Corn, Soybeans, Wheat, Alfalfa, Cotton, Hay, Tobacco and Rice.

Changing practices in using the living resources the land provides has resulted in certain stresses on these resources. This has led to the need to become better managers of the resources we have and need. Scientists, farmers and foresters are working together, developing practices that will reduce the negative effects that sometimes occur when we harvest plants for food and fibre.

**Sustainability** (an ecological balance) is essential, if we are to keep our living resources healthy in the long term.

### Forestry

The **National Forest Service** manages forests resources by establishing methods and regulations that foresters must follow when a forest is to be harvested. These regulations provide the rules for harvesting. Foresters explore a potential tree cutting area thoroughly before any work begins. They map the area indicating which species of trees are to be cut and what special features should be noted. They also decide how to cut the trees, either clear cut (removing all the trees) or, selective harvesting (removing only selected trees). Foresters attempt to improve the conditions (light, temperature, water and nutrients) within the forest. Leftover branches (from the logging operations) must be disposed of. They are chopped (shredded) spread out over the forest floor and some smaller piles are burned. Replanting is always done by hand. When the trees begin to grow again, if too many of a particular kind compete, they must be removed by thinning or pruning. Fertilizer is dropped from a helicopter to improve the level of nutrients for the young trees. Forest fires are a natural development of forests, but foresters try to ensure that they burn in a controlled fashion (as much as possible).

Although a large volume of timber is logged every year, not all National Forests are entirely forested. The Forest Service is also responsible for managing National Grasslands in the Midwest. Certain forested areas are designated as wilderness by acts of Congress. This designation prohibits logging, mining, road and building construction and land leases for purposes of farming and or livestock grazing. From these forested areas come lumber and pulp and paper products. Natural forests have many different kinds of trees, shrubs, and smaller plants. There are many animals that make their homes in, around and under these plants. A natural ecosystem has a higher diversity, or variety, of plants and animals than a field of wheat or a stand of trees. The species within this ecosystem are all interdependent. Forestry practices can increase the diversity of forest species by careful cutting to let in more light and air.