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# THE BEAUTY OF TREES

## Why Study Trees?

When we step out of our front door and our lungs are filled with the richness of the fresh air, seldom do we consider the source of that gift of breath. All around us, innumerable forms of plant life provide the means that sustain the creatures that roam the earth. All life on our planet is dependent on oxygen and food for survival. However, no animal (or human) is capable of producing either. Plants have the unique ability to create food by harnessing the power of the sun's light, and can even produce the oxygen all living creatures need to breathe.

Besides the essential role plants fulfill in our planet's system of life, plants also come in many varied forms, which makes them fascinating and exciting to study. From the soft grass that slips between your toes, to climbing vines with delicious fruit, the earth is filled with interesting plants of all shapes and sizes. Still, one member of the plant kingdom sets itself apart by its size and beauty.

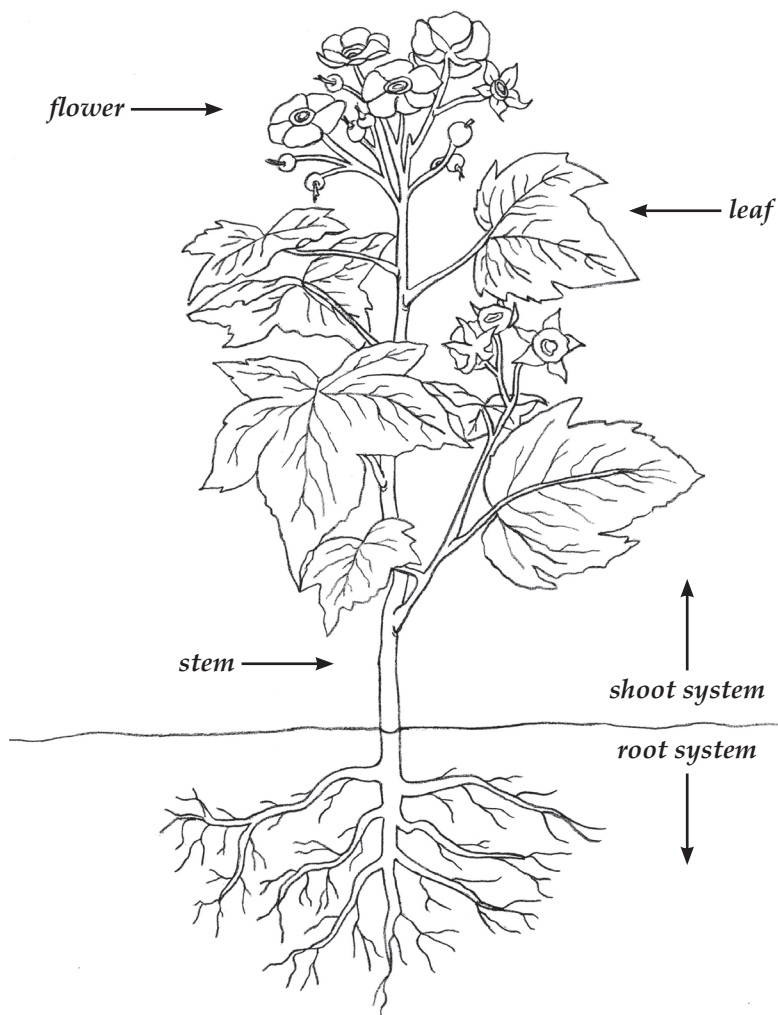
Towering above people and buildings, decoratively adorning front yards, trees are everywhere you look. Trees provide fruit for consumption, homes for various animal life, and the greatest amount of oxygen produced by any plant. The durable material that comes from trees—wood—can be used for anything from baseball bats to sailboats. Cultures around the globe have integrated native trees into the folklore of their

people. The age and resilience of trees have made them a symbol of wisdom and strength. The majesty of trees has made them the object of poems and stories. Considering their value and importance, it seems a worthy exercise to study the nature and attributes of trees.

## Plant Systems & Organs

In order to better understand trees, we must first understand the properties of the plant family to which they belong. Plants, like all complex living organisms, are organized into systems of **organs**. Organs are structures made of tissue that perform a particular job. When multiple organs work together to complete a particular function for an organism, they are said to be a part of a **system**. The human body has many organs, divided into eleven systems. For example, some of the organs that make up the human digestive system are the esophagus, stomach, and the small and large intestine.

Plants, on the other hand, aren't nearly as complicated. Plants are easily split up into just two systems, roots and shoots. The **root system** is made up of only one organ, the **roots** themselves. The root system anchors the plant and performs the functions of absorbing water and nutrients and storing food. The **shoot system** is responsible for holding the plant upright, manufacturing food, and reproducing the plant by means of seeds. There are three organs involved in the processes performed by the shoot system: the **stem**, the **leaf**, and the **flower**.



**Figure 1:** Root and Shoot Diagram

# THE ROOT SYSTEM

## Types of Roots

Just like animals and humans, plants need food and water in order to live and grow. Although plants can produce their own food, they must get water by extracting it from the ground. The organ a plant uses to get water from the soil is its roots. Root systems for plants come in two basic designs.



**Figure 2:** *Taproot (left) vs. Fibrous Root (right)*