

Anatomy of a Tree

The oak tree is the undisputed king of the Western world. It is known for its lobed leaves and the large cap of its acorn, a nut found on all trees of the genus *Quercus*. The tree's main trunk grows upward and branches out toward the top. Oaks are a large group, containing many types of deciduous trees. Under optimal conditions oaks can grow to a height of more than 130 feet (40 m) and live an average of 600 years. ●

The leaves absorb CO₂ and produce sugars by means of photosynthesis.

Transpiration (the loss of water vapor) in the leaves pulls the xylem sap upward.

Flowers

The tree produces hanging male flowers, whereas female flowers are hidden among the leaves.

Buds

are formed by protective scales that fall off in the spring. They grow into new leaves and branches.

Trunk

The trunk is strong and grows straight upward. The top of the tree widens with branches, which may be twisted, knotted, or bent.



Climate

Trees grow in any place where there is sufficient water in the soil.

Spring
The cycle begins as the first leaves appear.

Summer
The oak blossoms. It increases in height, and its trunk grows thicker.

Autumn
Low temperatures weaken the branches.

Winter
The leaves fall away; the tree is dormant until spring.

Woodpeckers drill holes in the tree with their beaks as they look for insects.

Leaves

are arranged one leaf to a stem on alternating sides of the twig. They have rounded lobes on either side of the main vein.

Summer
The leaves undertake photosynthesis, and the rest of the tree uses the sugars it produces.

Autumn
The cells at the end of each leaf stem weaken.

Winter
The leaf falls away, and the tree remains dormant.

Spring
New leaves begin to replace the old ones.

Acorns

have dark stripes along their length. Their caps have flat scales.



Seeds

Some species have sweet-tasting seeds; others are bitter.

600 years
THE AVERAGE LIFE SPAN OF AN OAK

Beginnings

In its first year of life an oak tree's roots can grow nearly 5 feet (1.5 m).

Oak-Tree Products

The bark is rich in tannin, which is used in curing leather and as an astringent. The wood is strong and resists rotting.

Energy Source

The chlorophyll traps energy from sunlight and uses it to convert water and carbon dioxide into food.

Surface

Mosses use the bark of oak trees as a source of moisture.

Roots

grow sideways to form a deep, broad root system.

Absorption of Water and Minerals