Lesson 1:
Trees Matter

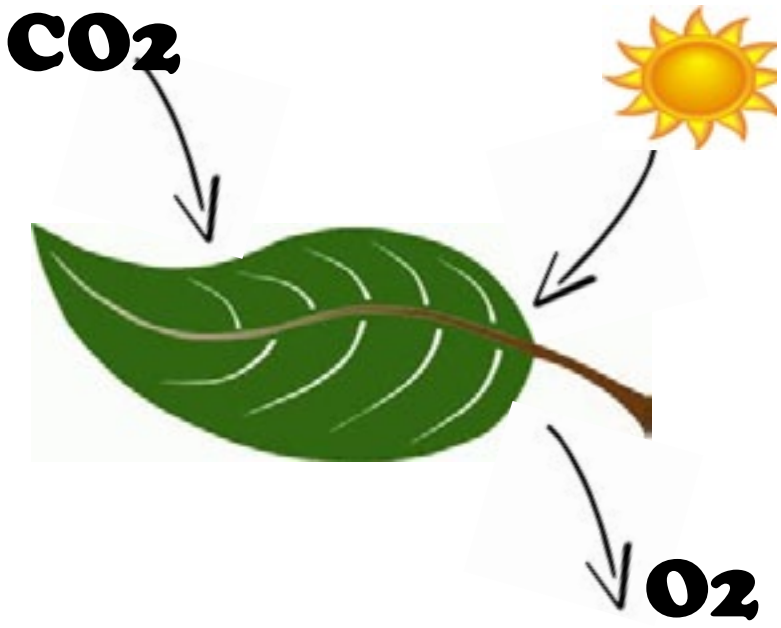
Science Lessons | Grades 6-8

CALIFORNIA ARBOR WEEK
MARCH 7 - 14

Overview:
This lesson covers the critical role trees place in carbon sequestration. Key concepts are ***photosynthesis***, the ***Mycorrhizal zone***, and ***biosynthesis***.

Leaves:

Photosynthesis happens in the leaves of trees. Carbon dioxide is a primary ingredient in the process, in combination with sunlight and water. Most would assume this is the primary means that a tree uses to sequester (store) carbon, but the truth of the matter is that the carbon sequestration goes much deeper. Carbon is used to produce carbohydrates (sugars) for the tree -- its primary food source. These sugars move from the leaves, down the trunk, and into the roots.



Roots:

The ***Mycorrhizal zone*** of the tree (roots and fungi) is a powerhouse of nutrient cycling for carbon and nitrogen. It is, surprisingly, the most powerful sequestration zone. Roots, fungi, and soil all store carbon and can lock it in for many years. Carbon does move down the trunk of the tree into the roots, but the other method that brings carbon to the soil is through the leaf litter and decomposition. The fungi around the roots, called Mycorrhiza, use the carbon (carbohydrates) for energy. This below-ground ecosystem plays many important roles in our urban forests that will be examined furter in the lessons that follow.

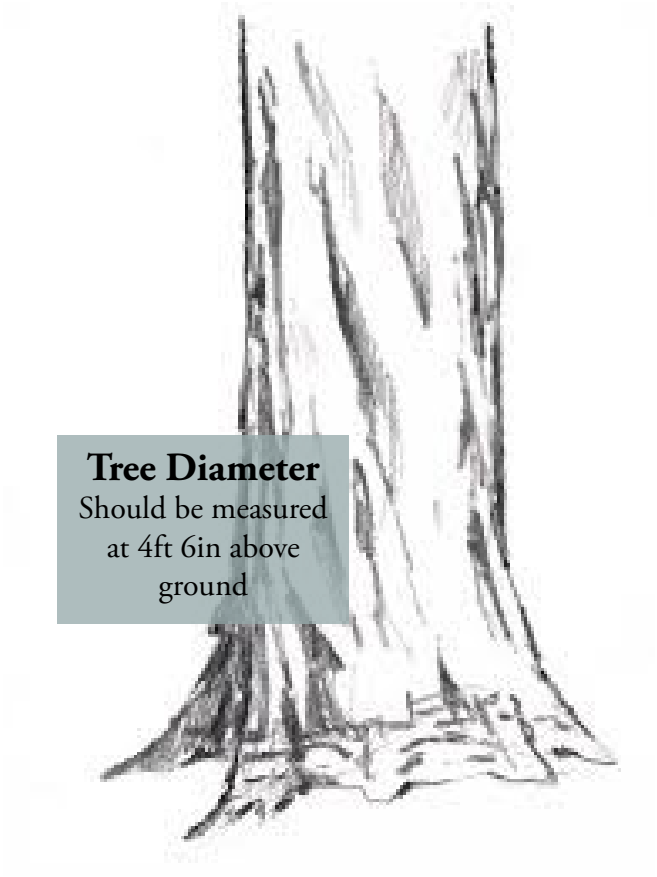
Tree Benefit Calculator

Visit **http://www.treebenefits.com/calculator** to figure out how much carbon a tree stores.

Trunk:

Biosynthesis is the key carbon cycle process that generates gains in biomass. Biomass is the process of storing carbohydrates in the trunk of the tree. This storage process increases the mass of the trunk and stores carbon. The diameter of a tree and its species can help scientists calculate the quanity of carbon stored. A Tree Benefit Calculator can give you a quick glance at the estimated carbon storage of a tree.

How does a tree help "avoid" carbon? One of the largest contributors to carbon production is the use of energy. Trees can create a cooler, environment which in turn uses less energy... or, in other terms, avoids carbon!



Tree Diameter
Should be measured at 4ft 6in above ground

California ReLeaf is funded in part by the California Department of Foresty and Fire Protection and the National Urban and Community Forestry Program of the USDA Forest Service. This institution is an equal opportunity provider.