# Unit 3 Photosynthesis - Leaves

Content Area: **Science**
Course(s): **Horticulture 1**
Time Period: **November**
Length: **8 Blocks**
Status: **Published**

## Transfer Skills

At the end of this Unit of instruction students will evaluate the steps, importance of, and global significance of photosynthesis in plants.

## Enduring Understandings

Investigate the reactants and products of photosynthesis.

Observe the plant cells organelles involved in photosynthesis.

Recognize the function of photosynthesis in plant growth.

Measure photosynthesis reactants and products using greenhouse samples.

## Essential Questions

How is sunlight a nutrient?

## Content

Vocabulary:

Petiole, blade, midrib, vein, margin, epidermis, guard cells, stoma, transpiration, chloroplasts, photosynthesis, oxidation

## Skills

Summarize the chemical process of photosynthesis and factors that affect this process.

Describe the functions and structure of leaves.

Examine types of leaves, leaf arrangements, and leaf margins as a means of plant identification.

Recognize several adaptations of leaves and to understand the color changes in leaves that occur in autumn.

## Assessments

Project - Measuring the Rate of Photosynthesis

Conduct measurements and control variables while growing plants to show the results of photosynthesis.

Quiz - Reactants and Products of Photosynthesis

Evaluate understanding of vocabulary and processes of photosynthesis.

Quiz - Observing photosynthesis organelles

Observe and diagram leaf parts using microscopes.

Test - Major Assesment based on Unit 3 instruction and greenhouse progress.

Individual summative assessment to gauge student acheivement and understanding during Unit 3 instruction.

## Standards

LS1.C: Organization for Matter and Energy Flow in Organisms

**LS2.B: Cycles of Matter and Energy Transfer in Ecosystems**

| | |
|---|---|
| CCC.1 | Patterns. |
| CCC.1.1 | students observe patterns in systems at different scales and cite patterns as empirical evidence for causality in supporting their explanations of phenomena. They recognize classifications or explanations used at one scale may not be useful or need revision using a different scale; thus requiring improved investigations and experiments. They use mathematical representations to identify certain patterns and analyze patterns of performance in order to reengineer and improve a designed system. |
| HS-LS1-5 | Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. |
| HS-LS2-5 | Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. |
| 9-12.HS-LS2-5 | Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. |
| 9-12.HS-LS1-5 | Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. |

## Resources

Text:

Introductory Horticulture 8th ed(Cengage Learning), Hardcover (2011)
by H Edward Reiley, Carroll L Shry

Greenhouse

Planting Materials including soil, water, seeds, Fertilizer.

Leaf Samples