

The Structure and Function of Leaves

by Adrian Dinsdale

Experiment Overview

To introduce you to photosynthesis – the fundamental energy transforming process that occurs in green plants, and to the structure of the leaves that facilitate it. This process is essential for all life on earth as we know it

Part 1: Photosynthesis of Experiment

- . Set up experiment on photosynthesis in *Egeria densa*
- . Take measurements of the practical
- . Calculate the photosynthetic rate

Part 2: Leaf Structure

- . Examine leaf transverse sections on prepared slides of *Zea mays* (a monocot) and *Ligustrum sp.* (a dicot)
- . Prepare and stain transverse sections of *Eucalyptus* leaves

Learning Experience

The experiment appears to meet all the criteria that students state they wish to be in a practical laboratory session (eg. Hands on, direct observation of a biological process, use of technical apparatus, quantitative measurement of a process taught in theory) but it consistently rates only average in student feedback.

Aims and Objectives

To teach students about photosynthesis and help them to understand it is both light and enzyme dependant, and that there are specialised structures within leaves for this function.

Level of Experiment

First year

Course Context and Prerequisite Knowledge and Skills

This prac is a component of 1st year plant science which gives a general all-round introduction to plants from cellular morphology, anatomy and physiology, right through to more holistic concepts such as communities, evolution and population ecology.

Some familiarity with the theory behind photosynthesis and the basic, relevant cellular structures (stomata, vascular bundles, etc).

Time Required to Complete

Prior to Lab: 30 minutes

In Laboratory: 3 hours

After Laboratory: 0

Experiment History

This experiment has a long history at the department of at least 10 years. I do not know who the original author of this experiment was.

References

Some images are taken with permission from Knox et al. 3rd Ed.