

# BIOLOGY

## HL UNIT 9

### PLANT SCIENCE

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The tissues main that are found in a mesophytic leaf are epidermal tissue, vascular and ground tissue. The main part of a leaf is the blade of the lamina; it consists of a large surface area for photosynthesis but is only 0.3mm thick it composes of four thin tissues of layers with veins at intervals. Leaves most important task is photosynthesis that why leaves are flat and wide. So the most important tissue in a leaf is the palisade and the spongy mesophyll.

The epidermal tissue is the tissue that surrounds and protects the leaf. The epidermal tissue has two parts to it; there is an upper tissue and a lower tissue that server different function. The upper epidermal tissue is a continuous layer of cells covered by a thick waxy cuticle, it prevents water loss from the upper surface even when heated by sunlight, regulates gas exchange and absorbs mineral nutrients and water that happens to pour upon it and.

The lower epidermal tissue is in a cooler position and has a thinner waxy cuticle, it's responsible to prevent water loss and it consists of the stomata and guard cells. The stoma is situated at the bottom and it pore that allows carbon dioxide to enter and release oxygen. The

guard cells are a pair of cells that opens or closes the stomata and controls transpiration of the leaf as it opens or closes pores.

Vascular tissue is a complex conducting tissue; it is situated in the middle of the leaf. The tissue transport fluids and nutrients internally within veins and the primary components of a vascular tissue are Xylem and Phloem. Xylem is responsible for the transportation of water and minerals within the plant. It is also used to replace water lost during transpiration and photosynthesis. Phloem is the living tissue that carries organic nutrients.

Ground tissue is the tissue within the plant that is not the epidermal tissue and the reproductive tissue. The ground tissue has parenchyma cells which give support to the plants and acts like the bone structure of a plant. It also includes palisade cell which is responsible for photosynthesis and lies on top of the spongy mesophyll. The spongy mesophyll is responsible for the gases exchange.

The first stage for the germination of an angiosperm seed is that it starts to absorb the water and rehydration of living cells in the seed then this makes the cell metabolically active. After the absorption of the water a plant called gibberellins is produced in the cotyledons of the seed. Gibberellin produces an amylase which creates a chemical reaction in digestion with the starch to make maltose in the food stores of the seed. The maltose is transported from the food stores to the growth areas such as the embryo root and the embryo shoot. Maltose is then turned into glucose which is then either used for cell respiration as a source of energy, or its used to synthesize cellulose or the other substances that is needed for growth. As soon as the leaves start to get sunlight, photosynthesis will be used to produce food and the food stores will no longer be needed.