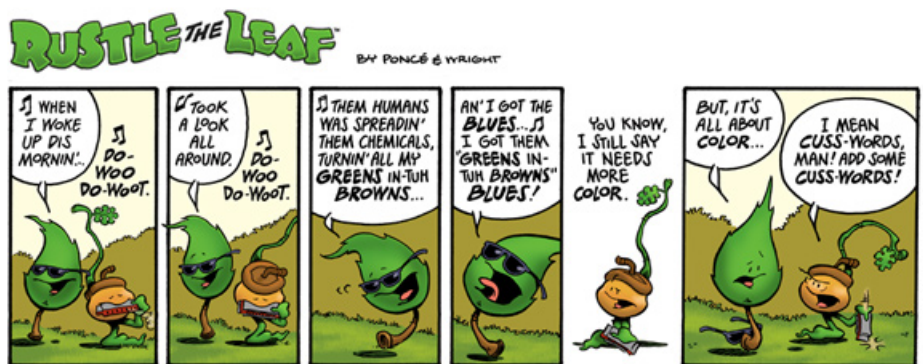


BSCS Biology An Ecological Approach

Chapter 13 Eukaryotes: Plants



Introduction

Plants first developed in the oceans, lakes and seas of the earth. Over time, they adapted to survive on land. Plants now inhabit virtually all habitats on land. They were able to do this because they developed specialized cells and groups of cells. The largest living things as well as the longest living things on earth are plants. Finding, keeping, and processing water is what has allowed plants to survive on land.

The Evolution of Land Plants

One of the first adaptations of land plants was the development of **vascular** tissue which allowed for the distribution of fluids to different parts of the plant. Other specialized tissues include support and food-making structures such as stems and leaves. Land plants also developed systems for exchanging gases. For example, **stomates**, allowed for the control of gases in and out of leaf structures. The two main groups of **vascular plants** are the **flowering plants** (roses, apple trees, and sunflowers) and the conifers and **cone producing plants** such as pine trees, gingkos, and cycads.

Types of plant reproduction

The more primitive members of the land plants (**bryophytes**) need wet or moist environments to survive. This is because water is a necessary part of their life cycle. There are two distinct phases of reproduction in the bryophytes: 1. the **haploid** or **sporophyte** phase, and 2. the **diploid** or **gametophyte** phase.

Flowering plants have evolved with special reproductive adaptations more suitable for living on land. These consist of the flower with the male **stamens** and the female **ovules**. **Pollen** (male) is produced and fertilizes the **stigma**. Seeds develop in and from the ovules. Enclosed in each flowering plant seed is an **embryo** (tiny plant) and food for the new plant in its first stages of development.

Primitive Vascular Plants

Club mosses, horsetails, and ferns are all primitive **vascular** plants. They all live in moist or wet environments because of their reproductive needs. They contain vascular tissue used to transport fluids and nutrients. Horsetails are known as **scouring rushes** because they contain a high content of silica in their stems. **Ferns** are the most advanced of this group reaching small tree size.

The Conifers

This group of vascular plants includes the **pin**es, **spruces**, and **firs** and are generally **evergreen**. They take two years to complete their fertilization and seed production. Conifers are economically important as a source of many products, primarily lumber and wood. Conifers have been on earth much longer than flowering plants

Pollination

In order for more advanced plants to reproduce, they must be **pollinated** (fertilized). Many plants are **self pollinated**, but many others have evolved with structures that allow only for **cross pollination**. Pollinators are animals who pollinate the plants while they go about their business of finding food. Most pollinators are insects. Some very special relationships between the pollinator and plant have evolved through **coevolution**.

Fruits and Seeds

After plants are fertilized, they produce seeds. These seeds are often surrounded by **fruits** which can aid in their **distribution**. For example, some seeds can be found in edible fruits and when these fruits are consumed, the seeds pass through the body of the consumer ready for **germination**. Seeds are **dispersed** (scattered) through other methods including wind and adaptations that allow them to “hitchhike” in the fur of animals to new locations.

Flowering Plants

These are the most diverse of the land plants. They are both **herbaceous** and **woody** and contain a wide variety of species. The two sub-groups of flowering plants are the **monocots** and **dicots**. There are major differences between these two groups, but both are beneficial in many ways to humans.