Plant Structures

Chapter 4 Lesson 3

**Vocabulary**

Root cap- tip of the root that protects the root from injury as it grows through the soil.

Cambium- the layer of a stem that produces new xylem and phloem

Stomata- pores or small openings on the surface of the leaf, which allow gases to enter and leave the leaf.

Transpiration- the process by which water evaporates from a plant’s leaves

Embryo- the young plant that develops from a zygote, or fertilized egg

Germination- occurs when the embryo begins to grow again and pushes out of the seed.

Flower- reproductive structure of an angiosperm

Pollination- transfer of pollen from male reproductive structures to female reproductive structures

Sepal- leaflike structures of a flower bud

Petal- colorful leaflike structures that are revealed after the sepal folds back

Stamen- male reproductive structures

Pistil- female reproductive structures

Ovary- a hollow structure that protects the seeds as they develop

**ROOTS**

\*Roots anchor a plant in the ground, absorb water and minerals from soil, and sometimes store food.

There are two main types of root systems:

Fibrous- many roots that form a tangled mass.

Plants with fibrous roots take a lot of soil with them when you pull them out.

Taproots- one long, thick main root.

Many smaller roots branch off the main one.

Plants with taproots are hard to pull out of the ground.

**Root structures**

Root caps- located at the top of the root. This protects the root from injury as the root grows through the soil.

Behind the root caps is the area for dividing cells. This is where new root cells are created!

Root hairs- help to anchor the plant in the soil.

Vascular tissue: Xylem- moves water up, Phloem- moves food down.

**Stems**

\*The stem carries substances between the plant’s roots and leaves. The stem also provides support for the plant and holds up the leaves so they are exposed to the sun.

**Stem Types:**

Herbaceous- no wood, often green, and softer outside ex: asparagus

Woody- hard and rigid bark ex: maple tree

The cambium- tissue that produces new xylem and phloem.

Annual Rings

Annual rings on a tree are made of xylem.

One pair of light & dark rings = one year.

The width of the ring depends on weather conditions such as rainfall so these can be used to study the past.

**Leaves**

\*Leaves capture the sun’s energy and carry out the food making process of photosynthesis.

Stomata- the pores or openings on the surface of the leaf. Stoma=singular (just 1)

The stomata open and close to control when gases enter and leave the leaf.

Also aid in water loss. The process by which water evaporates from a plant’s leaves is called transpiration.

**The Leaf and Photosynthesis**

Cells near the surface of the leaf get the most light from the sun.

The chlorophyll in the chloroplasts traps the sun’s energy.

During photosynthesis, sugar and oxygen are produced from the carbon dioxide and water.

**Seeds**

\*Inside a seed is a partially developed plant. If a seed lands in an area where conditions are favorable, the plant sprouts out of the seed and begins to grow.

Three main parts of the seed:

Embryo- the young plant that develops from a zygote (fertilized egg)

Stored food- to be used before photosynthesis can take place.

A seed coat- protects the embryo and food from drying out.

**Seed Dispersal (scattering of seeds)**

Animals- digestion, caught on fur

Water- seeds travel in streams/rivers

Wind- carries lightweight seeds. Ex: dandelions

A seed that is dispersed far from its parent plant has a better chance of survival. This is because it doesn’t have to compete for nutrients, water, or sunlight.

Germination- occurs when the embryo begins to grow again and pushes out of the seed. This begins when the seed absorbs water.

**Flowers**

\*A typical flower contains sepals, petals, stamens, and pistils.

Pollination- is the transfer of pollen from male reproductive structures to female reproductive structures.

Pollinators, such as bees, birds, and insects, help pollination take place.

All flowers have the same function – reproduction.

**Structures of a Flower**

Sepals and Petals:

When a flower is still a bud, it is enclosed by leaf-like structures called sepals.

When the sepals fold back, they reveal the flower’s colorful, leaf-like petals.

Stamens- the male reproductive parts.

Pollen is made in the anther, at the top of the filament.

Pistols- the female reproductive parts.

Ovary- hollow structure at the base of the flower, which protects the seeds as they develop.