

7th Life Science

Plant Reproduction

Chapter 14

14A – Sexual Reproduction

Review: genetic variety; gene pairs; diploid; haploid; gametes

In flowers gametes are produced in flowers, cones, or other special structures.

Flowers have one primary function for the plant: to produce seeds for reproduction

A flower's color, shape, and smell is designed to help carry out the flower's reproductive processes.

A typical flower consists of 4 different types of appendages [sepals, petals, stamens, carpels (pistils)]. There may be few or many of each of the four types, but each type usually is positioned on the flower base in the same relative location.

sepals – outermost

petals – inside sepals

stamens – inside petals

carpels (pistils) – in the center

Parts of a flower:

pedicel - the flower stalk; supports the flower

receptacle - the end of the pedicel that bears the floral parts and holds the developing seeds.

sepal - the leaflike outermost structure of a flower; usually green (some exceptions like the tulip – the tulip's

sepals are the same color and size as its petals

(collectively called the **calyx**)

protects the other floral parts as they develop in the bud

petal - any of the brightly colored leaflike structures (often the largest and most colorful parts)

(collectively called the **corolla**)

they attract insects and animals with their showy colors and sweet nectar

stamen - the male reproductive part of a flower

the organ which produces pollen (contains sperm)

two parts of the stamen:

1. **filament** - slender, elongated stalk
bears the anther

2. **anther** - the enlarged structure at the tip of the stamen (knobby sac)
produces the pollen

pollen - each kind of pollen has a definite shape and surface texture; many are covered with spikes or knobs.

carpels (pistils) - elongated, vase-shaped female reproductive part of a flower

the central structure in a flower

Three parts of the carpel (pistil):

1. **stigma** - the tip of the pistil that receives pollen (often sticky)

2. **style** - the stalklike structure of the pistil

3. **ovary** - the swollen base of the pistil that contains the future seeds

ovules - the future seeds (contain ova)

The ovary may be superior (above the receptacle) or inferior (within the receptacle)

complete flower - one which has sepals, petals, stamens, and pistils

incomplete flower - lacks one or more of the four basic flower parts

(example: poinsetta - they lack petals; the bright red structures are special leaves called bracts; all of the plants of the grass family produce incomplete flowers that have bracts instead of petals and sepals.

Specific terms are applied to incomplete flowers that lack either stamens or pistils:

staminate - lack pistils and have stamens (male flowers)

pistillate - lack stamens and have pistils (female flowers)

Example: corn - the tassels are staminate flowers

the ears are pistillate flowers

monoecious plant - any plants on which staminate and pistillate flowers are produced (oaks, walnuts, hickories, birches)

dioecious plant - produce staminate flowers on one plant and pistillate flowers on another (willows, poplars, American holly)

pollination - the transfer of pollen from an anther to the stigma

types: **self-pollination**: occurs in the same flower or with another stigma of the same plant

cross-pollination: from the anther of one plant to the stigma of a flower on another plant

after pollination: the fertilized ovum is a zygote that grows into a tiny embryo plant

the ovule develops into a seed (The seed contains the embryo, some stored food, and a protective coat)

the ovary develops into a fruit

horticulturists - agricultural scientists who specialize in growing flowers, fruits, vegetables, and shrubs

-----Quiz 14A

13B – Asexual Reproduction

Little genetic variation; has genes identical to its parent's.

Types:

- ◆ **Vegetative reproduction** - the growth of a new plant from a stem, leaf, or root (something other than a seed)
- ◆ **Vegetative propagation** - man's use of vegetative reproduction to grow a new plant from a root, stem or leaf.

Types of vegetative propagation that are induced:

1. **cuttings** (or slip) - a piece of a stem or root which is capable of growing into a new plant

Cuttings are possible because certain types of plants are able to sprout special types of roots at the cut end of their stems. Adventitious (ad ven tish' us) roots

When a yellow-flowering hedge shrub is trimmed, a new shrub may be started by simply sticking a trimmed stem into the ground.

advantages of using asexual reproduction to produce plants:

- A. You're certain the new plant will be identical to the plant from which the cutting was taken
 - B. It saves much time (compared to the time it would take to grow the plant from a seed)
 - C. It saves money (as compared to buying plants from a nursery)
2. **Layering** - a branch is exposed to the soil, allowed to form roots, and then separated from the parent plant. Vineyards use this method to quickly reproduce a desirable variety of grapes.
 3. **Grafting** - the process of transplanting living tissue from one plant to another. used to propagate seedless plants: grapes, navel oranges

Types of vegetative reproduction that are natural:

1. underground stolons (example: mints)
2. rhizomes (example: cattails)
3. corms (example: gladiolus)
4. bulbs (example: onion)
5. tubers (example: Irish potatoes)
6. runners (example: strawberries)

-----Quiz 14B