

CMG GardenNotes #135

Plant Structures: Flowers

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Thought question:

- o My zucchini is blooming but doesn't set any fruit. Why?
-

Flowers are the reproductive structures of a flowering plant. Flowers are the primary structures used in grouping plant families.

Function

- Reproduction, beginning with pollination and fertilization.
- Advertisement and rewards to lure a pollinator.
- Horticultural uses
 - o Aesthetic qualities
 - o Cut flowers and potted blooming plants
 - o Edible flowers and herbs
 - o Plant identification

Structure

Pistil – Central female organ of the flower. It is generally bowling-pin shaped and located in the center of the flower. [Figure 1]

Stigma – Receives pollen, typically flattened and sticky

Style – Connective tissues between stigma and ovary

Ovary – Contains ovules (unfertilized, immature seeds) or embryo sacs

Ovules – Unfertilized, immature seeds

Stamen – Male flower organ [Figure 1]

Anthers – Pollen-producing organs

Filament – Stalk supporting anthers

Petals – Usually colorful modified leaves that make up the “flower”, collectively called the *corolla*. They may contain perfume and nectar glands and are designed to attract pollinators. [Figure 1].

Sepals – Protective leaf-like enclosures for the flower buds, usually green, collectively called *calyx*. Sometimes highly colored like the petal as in iris [Figure 1].

Receptacle – Base of the flower [Figure 1]

Pedicel – Flower stalk of an individual flower in an inflorescence [Figure 1].

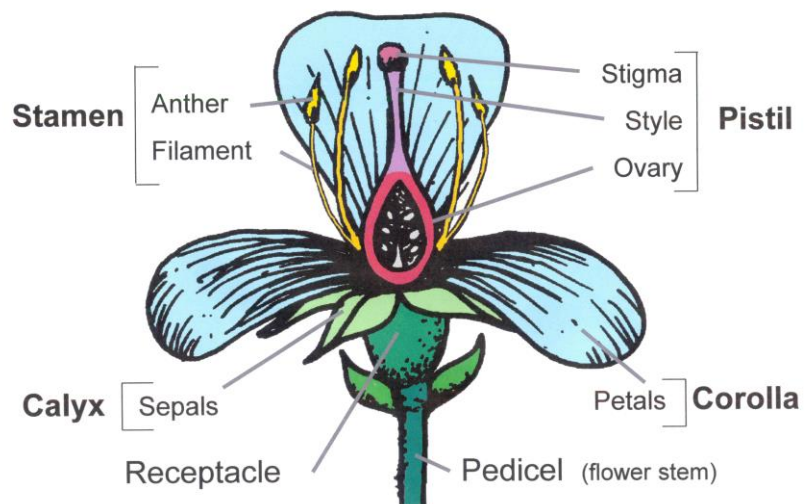


Figure 1. Parts of a Flower

Terms Defining Flower Types

Flowers

Complete – Flower containing sepals, petals, stamens and pistil

Incomplete – Flower lacking sepals, petals, stamens and/or pistils

Perfect – Flowers containing male and female parts

Imperfect – Flowers that lack either male or female parts

Pistillate – Flowers containing only female parts

Staminate – Flowers containing only male parts

Plants

Monoecious (mə-nē'shəs) – Plants with separate male flowers and female flowers on the same plant (corn, squash, and pine)

Dioecious (dī-ē'shəs) – Plants with male flowers and female flowers on separate plants (maple, holly, and salt brush)

Inflorescence (flower arrangement on a stem) [Figure 3]

Catkin – A spike with only pistillate or staminate flowers (poplar, walnut, willows)

Composite or Head – A daisy-type flower composed of ray flowers (usually sterile with attractive, colored petals) around the edge and disc flowers that develop into seed in center of the flat head (sunflower and aster) In some composites, the ray and disc flowers are similar (chrysanthemums, dahlias)

Corymb – Stemlets (*pedicels*) arranged along main stem. Outer florets have longer pedicels than inner florets giving the display a flat top. (yarrow, crabapple)

Cyme – A determinate, flat or convex flower, with inner floret opening first.

Panicle – An indeterminate flower with repeated branching. It can be made up of racemes, spikes, corymbs or umbels (begonia).

Raceme – A modification of a spike with flowers attached to a main stem (*peduncle*) by stemlets (*pedicel*) (snapdragon, bleeding heart)

Solitary (or single) – One flower per stem (tulip, crocus)

Spadix – Showy part is a bract or *spathe*, partially surrounding the male and female flowers inside. (calla, caladium)

Spike – Flowers attached to main stem, without stemlets, bottom florets open first. (gladiolus, ajuga and gayfeather)

Umbel – Florets with stemlets attached to main stem at one central point, forming a flat or rounded top. Outer florets open first. (dill, onion)

Symmetrical – Symmetrical flowers (lily)

Asymmetrical – Asymmetrical flowers (snapdragon)

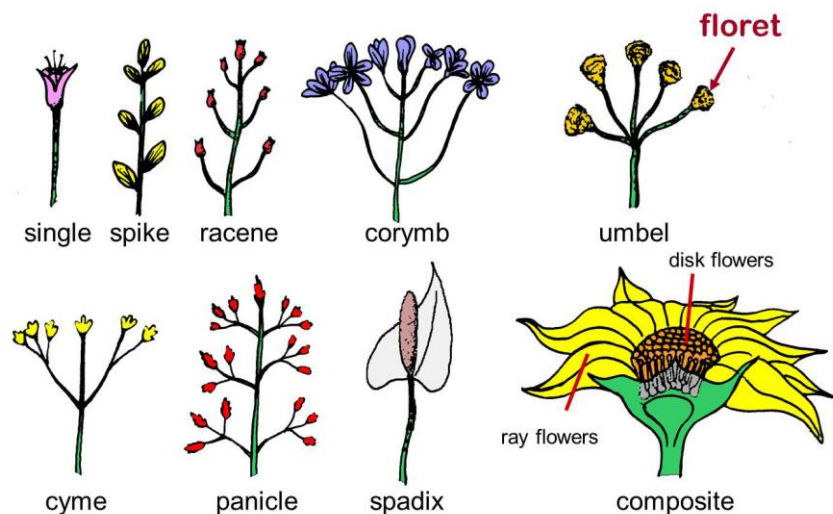


Figure 3. Flower Inflorescences

Nectar guides

To produce fruit and seed and insure their survival, plants need to be pollinated. Some flowers are wind pollinated (anemophilous), but most are not. They must attract an animal to assist with the process of moving pollen from the anthers to the stigma. Nectar, an energy rich fluid produced by flowers, along with the protein rich pollen, is the prize.

When pollinators collect nectar, the hairs on their bodies brush against the pollen and hold it tightly. As the pollinator moves to other flowers of the same species, the pollen can brush off onto the stigma and thus, pollination occurs.

To help bees and other pollinators find their way to their nectar, many plants have “nectar guides” on their flower petals. These may or may not be visible to humans. Often they are not; many are only visible in the ultraviolet range. Fortunately most insect pollinators can see in this light range and quickly find their way to the nectar. It’s an example of mutualism which ensures efficient pollination for the plant and fast nectar and pollen collection for the insects.

Fig.4 Nectar guides on *Penstemon* (lines on flower)



Additional Information – CMG GardenNotes on Botany):

#121	Horticulture Classification Terms	#136	Plant Structures: Fruit
#122	Taxonomic Classification	#137	Plant Structures: Seeds
#131	Cells, Tissues and Structures	#141	Plant Growth Factors: Photosynthesis, Respiration and Transpiration
#132	Plant Structures: Roots	#142	Plant Growth Factors: Light
#133	Plant Structures: Stems	#143	Plant Growth Factors: Temperature
#134	Plant Structures: Leaves	#144	Plant Growth Factors: Water
#135	Plant Structures: Flowers	#145	Plant Growth Factors: Hormones

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