CMG GardenNotes #135

Plant Structures: Flowers

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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
  - Aesthetic qualities
  - Cut flowers and potted blooming plants
  - Edible flowers and herbs
  - 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

Thought question:
- My zucchini is blooming but doesn’t set any fruit. Why?
**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](image)

**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** (di-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)

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)

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Colorado Master Gardener GardenNotes are available online at www.cmg.colostate.edu.
Colorado Master Gardener training is made possible, in part, by a grant from the Colorado Garden Show, Inc.
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Revised June 2016