



CMG GardenNotes #136

Plant Structures: Fruit

Outline: Function, page 1
Structure, page 1
Fruit Types, page 2
Fruit Growth Terms, page 2
Seed Dispersal in Conifers, page 3

Fruit develops from the maturing ovary following pollination and fertilization. Fruits can be either fleshy or dry. They contain one or more seeds.

Function

- Seed protection and distribution.
- Horticulture uses:
 - Feed, food, and oils.
 - Aesthetic qualities.
 - Plant identification.

Structure

Fruit consists of tissue derived from the plant pistil; the carpels house the developing seeds, and the ovary wall, or **pericarp**, develops into structures to help protect and/or distribute the seeds. Most fruits have seeds enclosed within the ovary, see **Figure 1**, (apples, peaches, oranges, squash, and cucumbers); but some plants have fruits with seeds that are situated on the periphery of the pericarp (strawberry). The peel of an orange, the pea pod, the sunflower shell, and the skin flesh and pit of a peach are all derived from the pericarp.

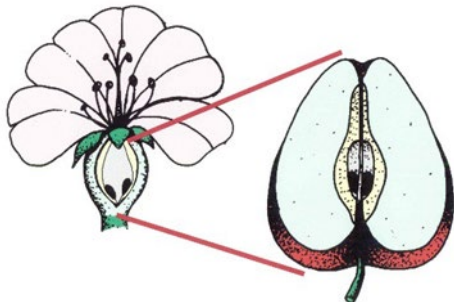


Figure 1. In apples, the ovary wall becomes the fleshy part of the fruit. Notice the small fruit structure in the blossom.

Fruit Types

Dehiscent Fruit – Fruit splits open at maturity, releasing (usually multiple) seeds (beans, flax, penstemon).

Indehiscent Fruit – Fruit formed from an ovary in which usually only one seed develops, and within which the seed remains during distribution (sunflowers, grasses).

Fleshy Fruit – Fruit developed from unicarpellate (one-seeded) or multicarpellate (many-seeded) ovaries. The ovary wall develops rapidly proliferating cells that take on diverse roles in the resulting fruit.

Hesperidium – Citrus fruit, with a rind and easily divisible segments.

Pome – A fleshy enlarged fruit derived from non-ovarian “accessory tissue” (like the receptacle) surrounding a leathery or papery core (the true “fruit”). Typical of the rose family, including apples, pears, and rosehips. [Figure 2]

Berry – A pulpy fruit with many seeds scattered throughout (tomato, blueberry).

Pepo – A type of berry usually with a hard outer rind, specifically characteristic of the family Cucurbitaceae (zucchini, pumpkin, cucumber).

Drupe – A fleshy fruit with a single seed originating from a single carpel, the pit (peaches, plums). [Figure 3]

Drupelet – A single-seeded fruit making up part of a larger composite fruit, as in blackberries and raspberries.

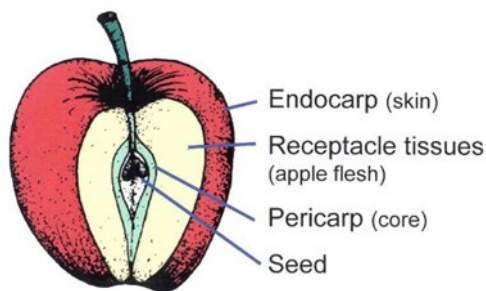


Figure 2. Pome fruit (apple).

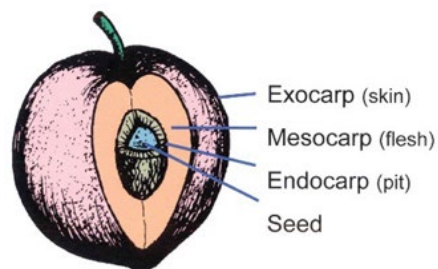


Figure 3. Stone fruit (peach).

Fruit Growth Terms

Pollination – Transfer of pollen from the anthers of the male flower to the stigma of the female flower.

Fertilization – Union of the sperm from the pollen grain with the egg cell in the female flower.

Abscission – The natural separation of the fruit from the plant.

Drop – Early abscission when not fertilized, when too much fruit sets on a tree, or caused by environmental factors.

Climacteric Fruit – Fruit that will continue to ripen if removed from a plant, for example, peaches, apples, bananas, pumpkins.

Seed Dispersal in Conifers

Conifers technically do not have fruit (remember that “gymnosperm” refers to the “naked seeds” of these plants). They do have analogous structures, though, in cones. Cones can be dry (pinecones) or fleshy (juniper berries). [Figure 4]

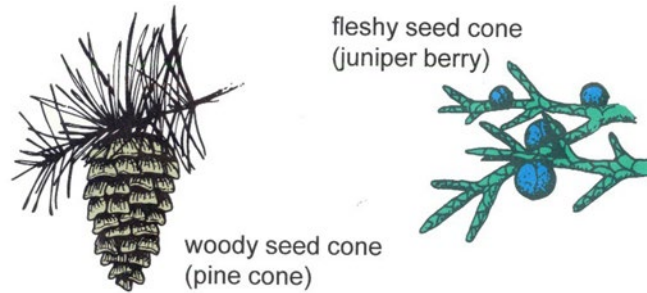


Figure 4. Fruit of conifers.
Left: Woody seed cone (pinecone).
Right: Fleshy seed cone (juniper berry).

Authors: David Whiting, CSU Extension, retired; Michael Roll, former CSU Extension employee; and Larry Vickerman, former CSU Extension employee. Artwork by Scott Johnson and David Whiting. Used with permission. Revised July 2016 by Patti O’Neal, CSU Extension, retired; Roberta Tolan, CSU Extension, retired; and Mary Small, CSU Extension, retired. Reviewed March 2023 by John Murgel, CSU Extension and Sherie Shaffer, CSU Extension.

- Colorado Master Gardener GardenNotes are available online at <https://cmg.extension.colostate.edu/>.
- No endorsement is intended of products mentioned, nor is criticism implied of products not mentioned.
- Copyright Colorado State University Extension. All Rights Reserved. CMG GardenNotes may be reproduced, without change or additions, for nonprofit educational use with attribution.
- Colorado State University, U.S. Department of Agriculture, and cooperating Colorado counties.

Colorado State University Extension is an equal opportunity provider.

Colorado State University does not discriminate on the basis of disability and is committed to providing reasonable accommodations.

CSU’s Office of Engagement and Extension ensures meaningful access and equal opportunities to participate to individuals whose first language is not English.

<https://col.st/OWMJA>

Colorado State University Extension es un proveedor que ofrece igualdad de oportunidades.

Colorado State University no discrimina por motivos de discapacidad y se compromete a proporcionar adaptaciones razonables.

Office of Engagement and Extension de CSU garantiza acceso significativo e igualdad de oportunidades para participar a las personas quienes su primer idioma no es el inglés.

Reviewed March 2023