

Rosid and Asterid Eudicots, part 2

Table 1. FYI: Economically important plants from this week's taxa (alphabetically by family).

- 1) **Asteraceae** (Compositae) includes many ornamentals and vegetable plants: *Helianthus* is the sunflower genus, which is the source of edible sunflowers as well as garden plants and cut flowers; *Cirsium* is an important genus because of its weeds called thistles; *Chrysanthemum* (chrysanthemums) and *Tagetes* (marigolds) are important as ornamentals; *Echinacea purpurea* is important as an herbal supplement and ornamental; *Cynara* is the artichoke genus; *Cichorium* contains chicory, an important weed as well as the source of roots that, when roasted, provide a substitute for or additive to French- and Louisiana-style coffee; *Lactuca* is the lettuce genus.
- 2) **Betulaceae** is the source of birch trees (*Betula*) of ornamental and essential oil importance, as well hazelnuts (*Corylus*).
- 3) **Fagaceae** includes edible nuts from *Castanea* (chestnuts), *Fagus* (beechnuts) and, when prepared properly, *Quercus* (acorns). Additionally, the oaks in particular are economically important for their wood, and all genera are valued as ornamental trees.
- 4) **Juglandaceae** includes edible nuts from *Jugans* (walnuts) and *Carya* (hickory nuts, pecans). Both genera are valued for their wood and as ornamental trees.

I. Families

A. Rosid 2 Families to Know on Sight

1. Fagaceae (oak & beech family) – p. 597

Diagnostic Summary: Trees (shrubs) with simple, often toothed or lobed lvs with veins extending to margin; Plants monoecious; Fls and infls unisexual, very small with perianth wanting, male fls in catkins; Fr a nut(s, 1-2) subtended by or enveloped by a cupule.

Generalized Flora Formula: Male: $P^{4-6} A^{4-20}$; In catkins
Female: $P^{4-6} G^{[3-6], 3-6 \text{ styles}}$; Infl subtended / enveloped by cupule

2. Juglandaceae (walnut & hickory family) – p. 607

Diagnostic Summary: Trees with pinnate lvs; Plants monoecious; Fls and infls unisexual, very small and perianth wanting, male fls in catkins; Fr a drupe (walnut) or modified drupe (*Carya*, with dehiscent exocarp/mesocarp).

Generalized Flora Formula: Male: $P^{(0)[3-6]} A^{3\text{-many}}$; In catkins
Female: $P^{[4]} G^{[2-3], 2-3 \text{ styles}}$

B. Asterid 2 Families to Know on Sight

1. Asteraceae or Compositae (aster & sunflower family) – p. 874

- Small to large herbs (shrubs)
- Lvs alternate to opposite, entire to toothed.
- Head inflorescences subtended by involucre.

Images in this document are copyright CR Hardy, 2016-onwards. They may not be reproduced or otherwise used without permission.

- Ca^{pappus} Co^[5] A^{5, connivent anthers} G^[2]
- “ray” flowers (ray florets), “disk flowers (disk florets)”
- Head “receptacle” flat, convex, concave; surface can be chaffy.
- Involucral bracts variously formed and often diagnostic.
- Fruits achenes in head.

Diagnostic Summary: Small to large herbs or subshrubs with radiate (e.g., sunflower, aster), ligulate (e.g., chicory, dandelion), or discoid (e.g., groundsel, snakeroot) flower-like heads; infructescence a head of small achenes, often with persistent pappus as dispersal aid.

II. Genera

Remember, you can write and use your own key to genera.

A. Rosid 2 Genera to Know

Fagaceae - p. 597

1. *Fagus* (trees)
2. *Quercus* (trees)

Juglandaceae - p. 607

3. *Juglans* (trees)

4. *Carya* (trees)

Betulaceae - p. 609

5. *Betula* (shrubs to trees)

B. Asterid 2 Genera to Know

Asteraceae –p. 874

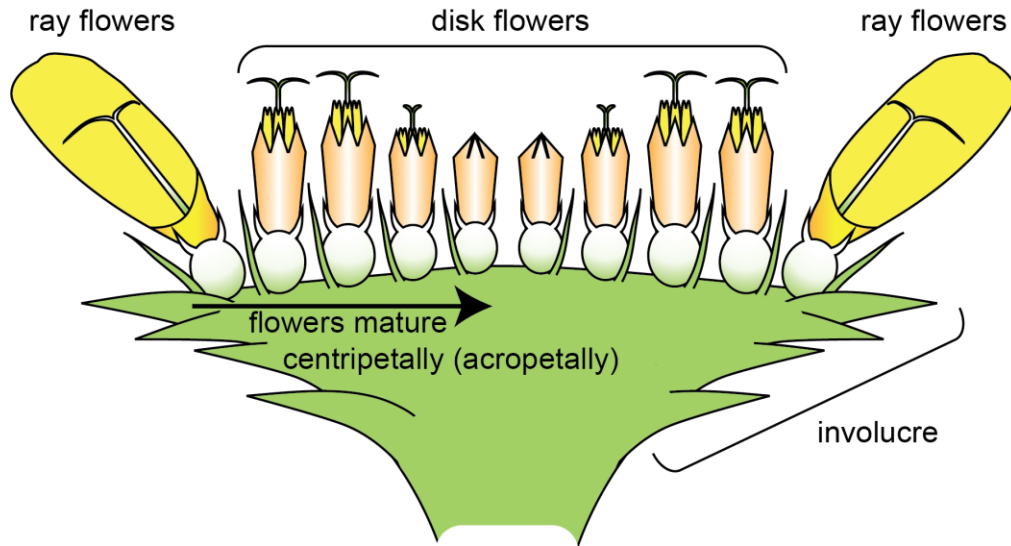
1. *Ageratina* (herbs)
2. *Chrysanthemum* (herbs; not in book)

3. *Cirsium* (herbs)
4. *Coreopsis* (herbs)
5. *Solidago* (herbs)
6. *Symphyotrichum* (herbs)
7. *Taraxacum* (herbs)

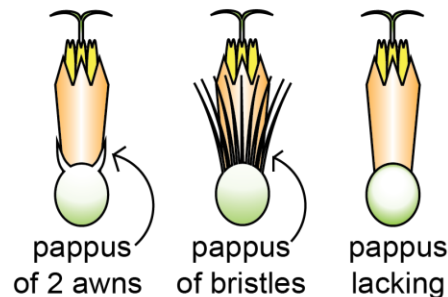
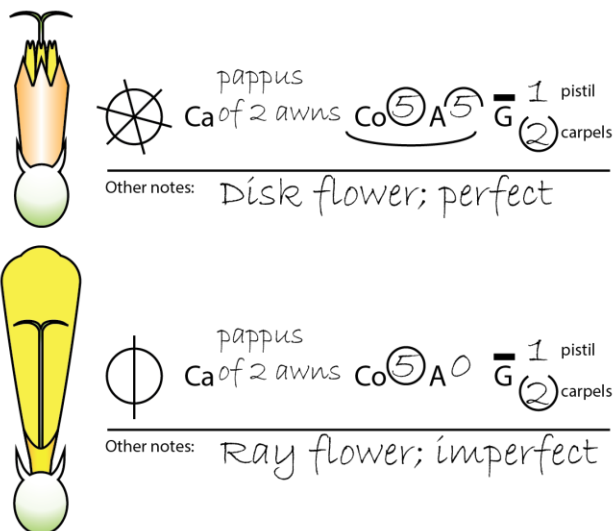
III. Other Information

A. The Composite Pseudanthium.

The apparent “flower” of a sunflower, aster or any of their relatives in the Composite family, Asteraceae, is actually a composite of many small flowers (Figs 1 A and B). The calyx of each flower is highly modified as a “pappus” which varies in form throughout the family (Fig 1 C) and generally persists in fruit to aid in seed dispersal. In the sunflower and other similar pseudanthia in many of its relatives, “ray flowers” around the periphery look like petals and serve to attract pollinators, while “disk flowers” in the center serve in pollination and seed production. The involucre and its bracts function like sepals.



A. The head of a sunflower is a contracted rachis subtended by an involucre of bracts. The apparent centripetal pattern of flower maturation follows the acropetal pattern expected along inflorescence rachises generally.



B. The sunflower pseudanthium has two types of flowers.

C. Pappus variation in the Composite family.

Fig 1. The small flowers in the Composite family collectively form showy inflorescences that resemble individual flowers (A, B). The calyx of individual flowers is typically modified to form a “pappus” (C) that serves in many species to aid seed dispersal.

Images in this document are copyright CR Hardy, 2016-onwards. They may not be reproduced or otherwise used without permission.

3 head types. Broadly speaking, there are 3 types of heads in the Asteraceae. In a typical radiate head, disk flowers in the center are surrounded by ray flowers around the periphery (see below). Other heads have only disk-like flowers, and these are called discoid or disciform heads. Other heads have only ray-like flowers and these are called ligulate heads.

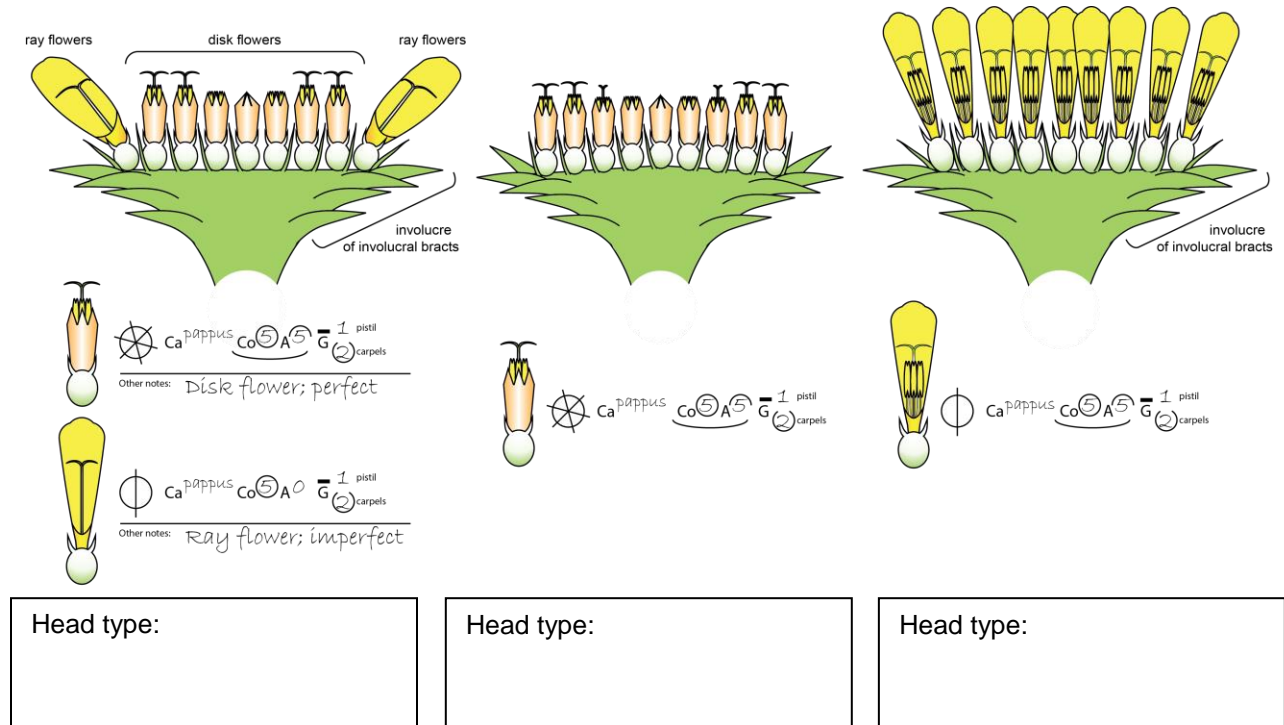


Fig 2. Three head types in the Composite family, Asteraceae