

Systematic Botany. Rosidae II

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Outline

Malvanae superorder of Rosidae

Cruciferae, or Brassicaceae—cabbage family

Malvaceae—cotton family



Malvanae superorder of Rosidae

Cruciferae, or Brassicaceae—cabbage family



General features of Cruciferae

- ▶ $\approx 3,000$ species
- ▶ Found mostly in temperate regions, especially in dry climates
- ▶ Morphologically and ecologically uniform family

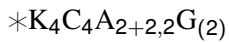
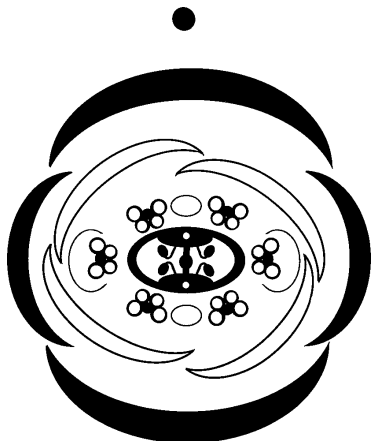


Morphology of Cruciferae

- ▶ Herbs, often **hairy**, contain mustard oils
- ▶ Leaves simple, often dissected, alternate, without stipules
- ▶ Flowers dimerous, in racemes
- ▶ 4 sepals, 4 petals, ancestrally also 4 stamens but inner stamens split each in two = 6 stamens in total
- ▶ Pistil has two carpels
- ▶ **Fruit** is a silique: dehiscent, with two cameras and replum bearing seeds. Identification without fruits is really difficult.
- ▶ Mature seeds with small amount of endosperm



Cruciferae flower



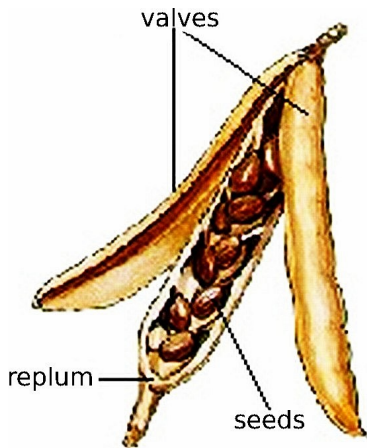
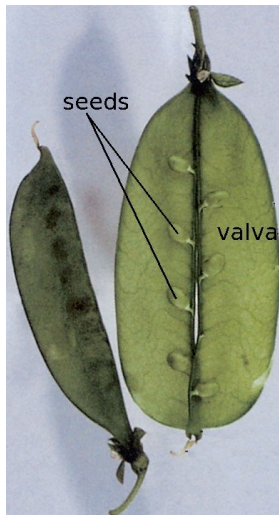
Representatives of Cruciferae

Important vegetables and spices, e.g.

- ▶ *Brassica oleracea*—broccoli, cabbage, cauliflowers
- ▶ *Brassica nigra*—black mustard
- ▶ *Brassica rapa*—turnip
- ▶ *Brassica napus*—rapeseed and “canola”
- ▶ *Raphanus*—radish
- ▶ *Armoracia*—horseradish
and
- ▶ *Arabidopsis thaliana*—famous model plant



Legume and silique



Arabidopsis thaliana



Malvanae superorder of Rosidae Malvaceae—cotton family



Malvaceae—cotton family

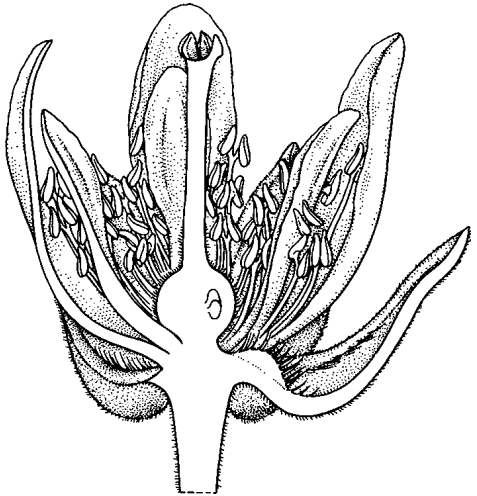
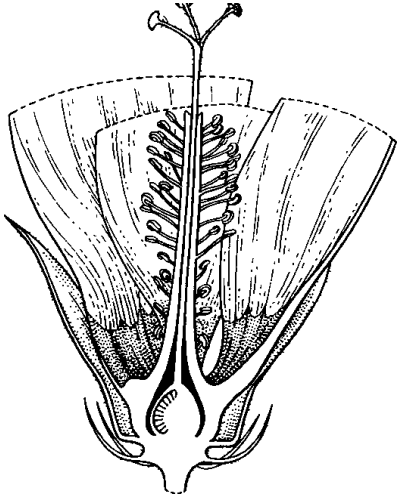
- ▶ \approx 2,300 species, now united several families (Bombacaceae, Sterculiaceae, Tiliaceae and Malvaceae s.str.)
- ▶ Distributed in tropical and temperate regions, equally in forests and grasslands
- ▶ Life forms: mostly trees and shrubs, core Malvaceae are herbs
- ▶ Leaves simple (or palmately compound), often with actinodromous venation, alternate, with stipules, often with star-like hairs
- ▶ Flowers mostly in inflorescences, bisexual, actinomorphic, usually with double perianth and often also with epicalyx, 5-merous; stamens multiplied and often fused in 1, 5 or more groups
- ▶ Pistil with superior ovary and 5 carpels
- ▶ Fruit is a capsule



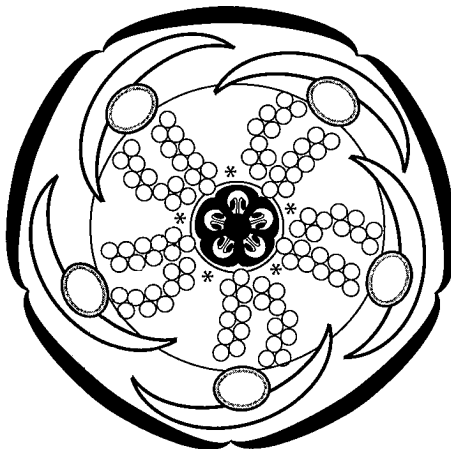
Malvaceae flowers



Hibiscus and *Tilia* flowers



Malvaceae flower



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Representatives of Malvaceae

Importance: textile (cotton), food (cocoa, hibiscus) and ornamental (mallows, basswood)

- ▶ *Malva*, *Abutilon*, *Sphaeralcea*—mallows
- ▶ *Theobroma*—cocoa tree
- ▶ *Gossypium*—cotton
- ▶ *Hibiscus*—hibiscus



Hibiscus tea plant



For Further Reading



A. Shipunov.

Shipunov, A. Plants of North Dakota. Manual.

2017—onwards.

Mode of access: http://ashipunov.info/shipunov/school/biol_448/nd_manual/nd_manual.pdf



A. Shipunov.

Shipunov, A. Flora of North Dakota: Checklist. Version 2. Ed.: Kartesz, J., and Nishino, M.

2017—onwards.

Mode of access: <http://ashipunov.info/shipunov/fnddb2>



Minot State University Herbarium (MSU)



Flora of Great Plains.

1986.

University Press of Kansas, Lawrence, KS.

