



Classification of plants

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- There are four important groups of plants
- **Bacteria, algae, fungi**

- **Mosses, lichens and liverworts**

Thallophytes

Bryophytes

Pteridophytes

Spermatophytes

- **Ferns, quillworts and club mosses**

- **Vegetables, most trees, shrubs, flowers and many others**

THALLOPHYTA

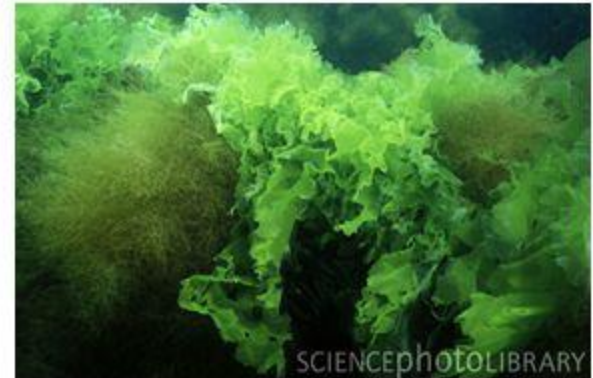
- The plant body is not differentiated into stem, root and leaves but is in the form of an undivided thallus.
- Vascular tissues are absent.
- The reproductive organs are single-celled and there is no embryo formation after fertilization.
- This division includes three sub-divisions: algae, fungi and lichens.

thallus = green shoot or twig

Thallophyta



Spirogyra are filamentous green algae found in freshwater



Cladophora and Sea Lettuce (*Ulva lactuca*)



Common stonewort (*Chara vulgaris*)



Three species of edible seaweed
Ulva, *Palmaria* and *Laminaria* (devil's apron)

Predominantly **aquatic plants** | Autotrophic

Simple thread like bodies with **non-differentiated root, stem and leaves**

1. Division – Thallophyta

- Most primitive & simple plants. Plant body is not differentiated into stem, root and leaves but it is in the form of an undivided **thallus**.
- Most are aquatic – marine/ fresh water. Some are terrestrial (live on land near moist places)
- Usually contain green pigment (chlorophyll) for photosynthesis. Some algae have other photosynthetic pigments such as red, brown, blue green and purple)
- Autotrophic

BRYOPHYTA

- These are called the amphibians of the plant kingdom. The plant body is commonly differentiated to form stem and leaf-like structures. However, there is no specialized tissue for the conduction of water and other substances from one part of the plant body to another. Examples are moss (*Funaria*) and
- *Marchantia* .

Bryophytes include.....

Liverworts



Hornworts



Mosses



Bryophyta

The division bryophyte, comprises the mosses, as well as liverworts and hornworts. The bryophytes are thought to have been the first true plants. They are also called amphibians of the plant kingdom.



1.

- The thalloid body is either flat (riccia) or liver-shaped (marchantia), hence these are also known as liverworts.



2.

- In some bryophytes such as moss the plant body is differentiated into stem and leaf like appendages. The thallus is attached to the substratum-soil, rocks, walls or tree barks, with the help of root like structures called rhizoids.



3.

- An embryo is formed upon fertilization.
- **Examples :-** 1. **liverworts:** marchantia, Riccia
- 2. **Hornworts:** anthoceros
- 3. **mosses:** funaria

2. Division – Bryophyta

- multicellular, small, simplest land plants confined to shady damp places
- Plant body - flat, green thallus in liverworts & leafy, erect structures in mosses
- lack true roots, stem and leaves and have no flower
- True vascular system absent

PTERIDOPHYTA

- The plant body is differentiated into stem, leaves and roots.
- Vascular system is present.
- Leaves usually have leaflets. Spores are borne on the undersurface of the leaf.
- They grow in damp cool shady places.

3 Groups of Pteridophytes

1) Ferns

2) Horsetails

3) Club moss



Pteridophytes

The division **Pterophyta** includes a group of primitive vascular plants.

Pteridophytes (**ferns**) and their relatives are considered as some of Earth's first land plants.

Pteridophytes are mostly terrestrial or aquatic and some species are also epiphytes that grow on the branches of trees.

More than 12,000 different species of ferns are distributed worldwide.

The adult plant body is known as sporophyte.

Spermatophytes

The spermatophytes (from the Greek word "Σπερματοφύτα"), also known as phanerogams or phenogamae, comprise those plants that produce seeds, hence the alternative name seed plants. They are a subset of the embryophytes or land plants. The term phanerogams or phanerogamae is derived from the Greek φανερός, *phaneros* = "visible", in contrast to the cryptogamae from Greek κρυπτός *kryptos* = "hidden" together with the suffix γαμέω, *gameein*, "to marry". These terms distinguished those plants with hidden sexual organs (cryptogamae) from those with visible sexual organs (phanerogamae).

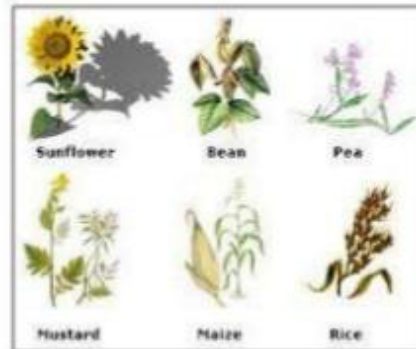
Characteristics of Seed Plants

- produce seeds
- sperm of seed plants do not need water; they form inside tiny structures called **pollen**
 - pollen is transported by wind or **animals**
- seed plants are the most **common** plants on Earth today

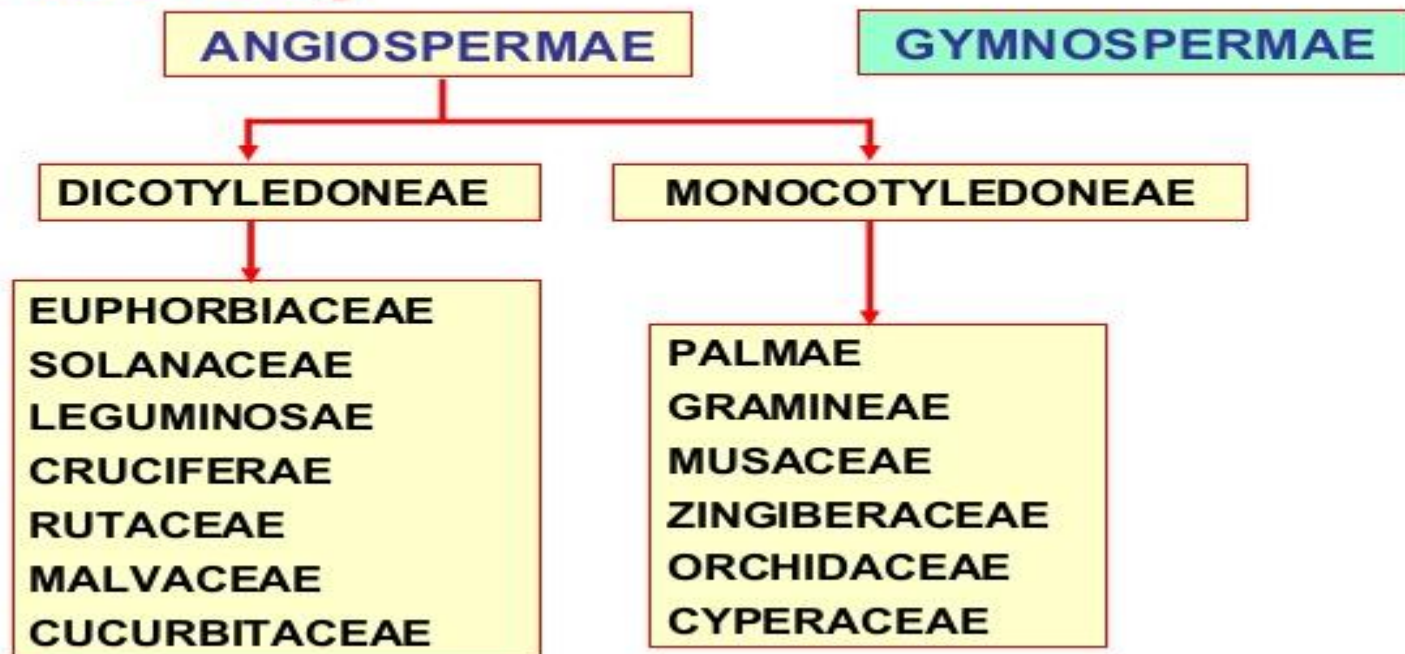


Seed Plants

- Seed plants reproduce sexually
 - Fertilization from male and female sex cells
- Two types:
 - Gymnosperms
 - E.g. Pine trees with cones
 - Angiosperms
 - E.g. Most have flowers



SPERMATOPHYTA (SEEDED PLANTS)



A close-up photograph of a purple flower spike, likely from a plant in the Lamiaceae family. The spike is covered in small, two-lipped purple flowers. The background is a soft-focus green, suggesting foliage. Overlaid on the image is the text "Thank you for attention)" in a bold, yellow, serif font.

Thank you for attention)