

BASICS

Four main groups:

- Bryophytes
- Pteridophytes
- Gymnosperms
- Angiosperms

Plants are divided into these groups according to:

1. The presence/absence of
 - Vascular tissue
 - True leaves, stems and roots
 - Spores or seeds
 - Fruits
2. Their dependency on water

DID YOU KNOW?

It is thought that all modern plants originated from algae



Note

When talking about plant diversity we deal with the Kingdom Plantae.



All plants are:

1. Multicellular
2. Eukaryotic – have membrane bound organelles and nucleus containing their own DNA
3. Have a cellulose cell wall
4. Often contain chlorophyll

PTERIDOPHYTES

Structure:

Ferns are a more advanced group than the mosses.

Most of their life is spent in the diploid sporophyte stage.

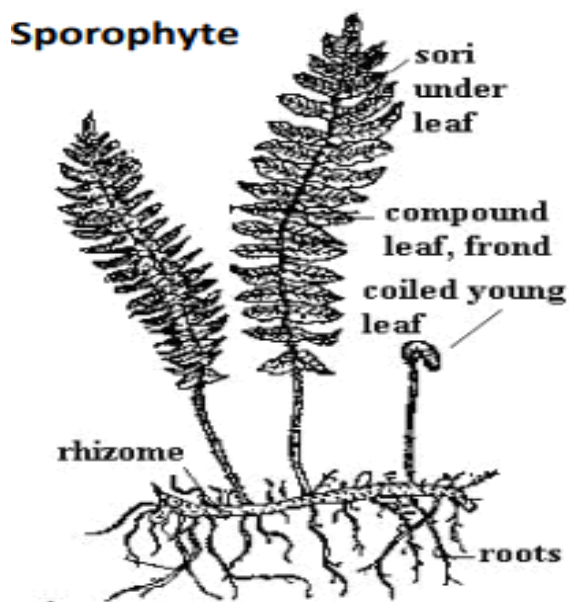
They grow in shady places and have less dependency on water than the mosses.

They have true roots, stems and leaves as well as well-developed vascular and strengthening tissue.

They have rhizomes (underground stems with true roots coming off them).

These roots function to anchor the plant on the soil as well as absorb water and mineral salts from the soil.

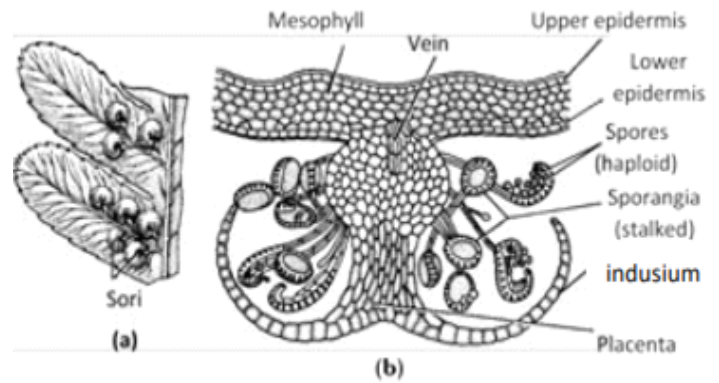
The fronds (compound leaves) have reproductive structures known as sori (singular: sorus) underneath them.



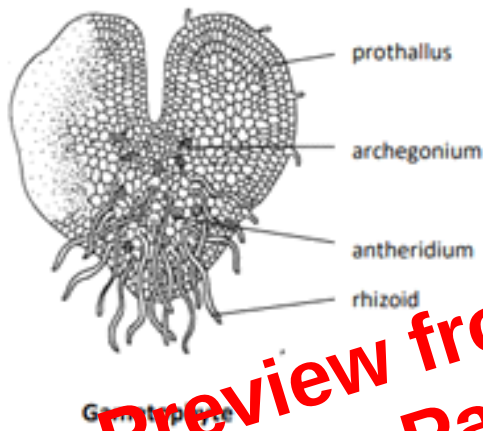
PTERIDOPHYTES

Reproduction:

Each sorus consists of groups of **sporangia** covered by a cap (the **indusium**). The sporangia produce **spores (n)** by **meiosis** which are released and dispersed by the **wind**.



Dryopteris (a) Part of sporophyll with sori (b) T.S. of sorus



If a spore lands on a suitable **substrate** (environment) it germinates and grows by **mitosis** into a **prothallus** (a short-lived, tiny green heart-shaped gametophyte 3-10mm in diameter). The prothallus has male organs (antheridia), female organs (archegonia) and rhizoids which anchor it in the soil.

If water is present, the sperm swim from the antheridia to the archegonia where fertilization occurs to form a **diploid zygote** which grows into a new sporophyte fern plant.

In summary:

sperm swim from antheridia to archegonia → fertilisation → diploid zygote → fern plant

Reproduction is therefore still dependent on water.