KINGDOM PLANTAE Algae Moss & Fern NOTES

Characteristics:

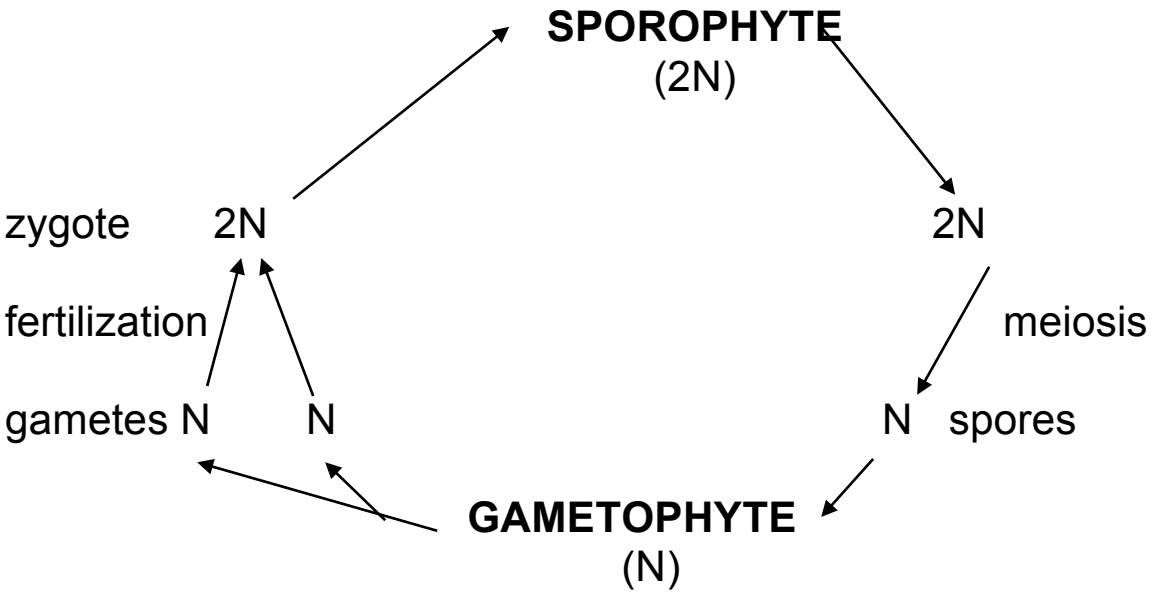
- Eukaryotes
- Autotrophs – have chlorophyll in chloroplasts for photosynthesis
- Cell walls made of cellulose
- Unicellular & multicellular
- Sexual & asexual reproduction
- A life cycle (L. C.) called alternation of generations

Life Cycle: Alternation of Generations

Plant switches back and forth between the sporophyte and the gametophyte generations (they alternate).

2 Phases:

1. Sporophyte generation = Diploid (2N)
   = Produces spores by meiosis.
2. Gametophyte generation = Haploid (N)
   = Produces gametes (sex cells).



AQUATIC PLANT REPRODUCTION: ALGAE

A. Asexual reproduction

3 types:

1. Fragmentation = piece breaks off cell body and grows into a new individual.
2. Asexual spores = haploid
3. Mitotic division = simple cell division –single celled algae.

B. Sexual reproduction

The two gametes fuse to form a zygote

There are two types of gametes: identical and different

1.Isogamy = identical gametes = isogametes = same size and structure. When isogametes fuse = conjugation. Isogametes are differentiated by + and – strain (like fungus)

2. Heterogamy = different gametes = different size and structure. Larger gamete = egg; smaller gamete = sperm. When egg and sperm fuse = fertilization.

Algae have accessory pigments

Function:

- Protect chlorophyll
- Absorb additional light for algae's photosynthetic machinery. This allows algae to live in deeper water than chlorophyll alone
- Gives algae its colour

AQUATIC PLANTS

Benefits of living in water	Problem with living in water
• Won't dry out	• **No** conductive tissue
• Water provides support for the plant	• **No** true roots, stems, or leaves
• Provides nutrients	• They must be thin to absorb nutrients & water through leaf-like structures
• Helps disperse spores	
• Helps gametes meet	

Ecological roles/ uses of algae

- Food source
- Supply O_2 to earth - phytoplankton
- Gelatin for pie filling
- Used to make agar plates (for study of bacteria!). *It gels the nutrient substrate together*
- Home & protection for animals
- Agar – ice cream
- Fertilizer for gardens.
- Part of lichens!

3 phylums of aquatic plants:

1. Chlorophyta = green algae
2. Phaeophyta = brown algae
3. Rhodophyta = red algae

PHYLUM BRYOPHYTA:

EX) mosses, liverworts, hornworts
Lack vascular tissue: no true roots, stems, or leaves

Mosses:

- Restricted to wet areas
- Dominant stage (stage you see and most associate with the plant) is the **gametophyte**.
- Simple cells in centre of stem-like and leaf-like structures to transport some things but mainly by **DIFFUSION**
- Rhizoids anchor the plant
- Reproduction – asexual = fragmentation
  Sexual = spores – dispersed by wind and water. Separate male and female gametophytes but on same plant =**unique**. Also need water so sperm can ***swim*** to egg.
- Mosses are pioneer species because it is the first to establish itself on rocks and soil surfaces where there are no plants. As they die, they enrich the soil for larger plants = soil formation like lichens!

Ecological roles

- Pioneer species
- Food source
- Home for animals
- Form peat = fuel source
- Very absorptive – soak up oil spills
- Antiseptic properties – dressings for wounds

PHYLUM TRACHEOPHYTA

Ex) ferns, gymnosperms, and angiosperms

Vascular plants – have vascular tissue (xylem and phloem)
True terrestrial plants

Ferns:

- Well developed vascular system therefore, TRUE roots, stems, and leaves
- Dominant generation is the sporophyte
- Gametophyte is small and independent of sporophyte
- Needs wet environment – water so sperm can swim to egg
- Reproduction – sexual = spores dispersed by wind and water.
  - Asexual = rhizome

Fiddlehead = young sporophyte = uncurling frond