Ch. PLANTS KINGDOM

Artificial Classification
Linnaeus
> Based on External characters
> Floral features.

Natural Classification
Bentham & Hookers
> Based on External & Internal characters.

Phylogenic System of classification
Whittakar, Engerspantl Hutchison

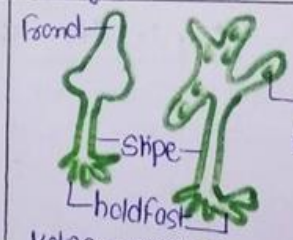
Plant kingdom
- Cryptogams (Sex organs hidden)
  - Algae
  - Bryophytes
  - Pteridophytes
- Phanerogams (Sex organs Exposed)
  - Angiosperm
  - Gymnosperm

Numerical taxonomy
> based on statistical methods.

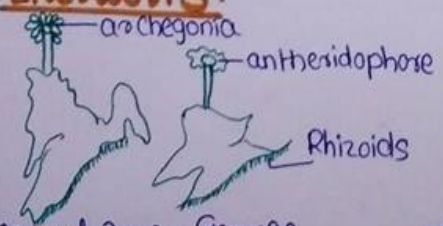
Cytotaxonomy
> based on cell structure

Chemo-taxonomy
> based on chem. Constitue of plants.

Isogamete Anisogamete oogamy.

Characters	Chlorophyceae	Phaeophyceae	Rhodophyceae
Common name	Green Algae	Brown Algae	Red Algae
Habitat	mostly marine, fresh	mostly marine	mostly marine
Chlorophyll	Chl. ab	Chl a, c	Chl. a, d.
other Pigment	β carotene, xanthophyll	β Carotene, xanthophyll, fucoxanthin.	ε-phycoerythrin, ε-phycocyan
Stored food	Starch	mannitol, Laminarin	Floridean starch.
Cell wall	Pectin & cellulose	cellulose & Algin	phosphate, esters, $CaCO_3$ cellulose Pectin.
Vegetative Repro	Fragmentation	Fragmentation	Fragmentation
Asexual	Zoospore	Biflagelate ♂	non-motile Spores
Sexual.	iso, aniso, oogamy	iso, aniso, oogamy.	oogamy.
Examples	Spirogyra Ulothrix Volvox Clamydomonas Chlorella Chara	Sargassum Fucus Laminaria Ectocarpus Dictyota	Polysiphonia Porphyra Gelidium Gracillaria
Unique Characters	Starch Protein → found in Chloroplast → Carbon Fix° → Starch formation → Starch store	 Kelps = massive	→ deepest Algae → color of algae changes acc. to depth. → Floridean = Amylopectin & glycogen.

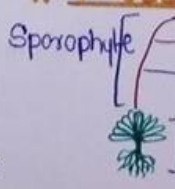
#Bryophytes:
Amphibians of plant kingdom need water for sexual Repro.

I. Liverworts:


→ Asexual Repro = Gemmae Fragmentation
→ Sexu Repro =



#Haplo-diplontic life cycle

II. Mosses:


1) Protonema
2) leafy Stage

→ Vegetative Repro = fragmentation & budding of 2° protonemma.

#Pteridophytes:
> First vascular plant
xylem lacks vessel.
Phloem lacks Companion cells & sieve tubes.
> Found in damp, shady places

Heterospory
→ production of two diff types of spores.
eg. Selaginella, Salvinia
#Imp. for Evolution.

Homospory
→ Production of Same kind of Spores.
eg. Algae, Bryophytes & most pteridos.

#Economic Importance
> help in Succession
> prevent soil Erosion.
> Used as packaging of material

@Gargigaikee

4 classes:
1. Psilopsida = Psilotum
2. Lycopsida = Selaginella, Lycopodium
3. Sphenopsida = Equisetum
4. Pteropsida = Dryopteris, pteris, Adiantum.

Economic Importance
> Prevent soil Erosion
> Source of food
> Ornamental
> Azolla with Anabaena → N fix.

#Gymnosperms (naked seed)

→ Sequoia (giant red wood tree)
Zamia (smallest)
Ginkgo (living fossil)
→ tap root system.
→ Pinus mycorrhiza
→ Xylem = lacks vessels
Phloem = lacks Seive tube, companion cells.

#Adaptations to prevent water loss:
→ conifers (needle like leaves)
+ thick cuticle
Sunken Stomata

Reproduction

megaspore (n) → meiosis → megasporangium (2n) → megasporophyll (2n) → ♀ strobilus (2n)

microspore (n) ← meiosis ← microspora (2n) → microsporophyll (2n) → ♂ strobilus

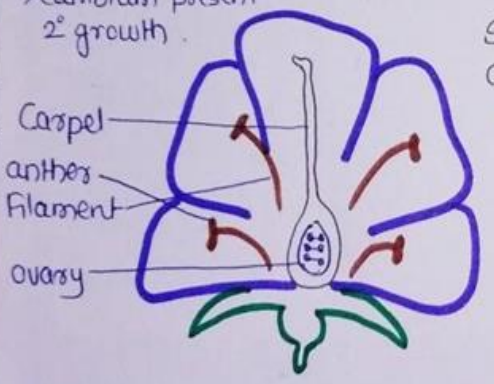


microspor mother cell (2n) → microspore → pollen grain

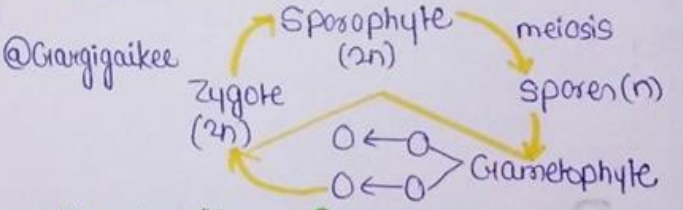
#Angiosperm

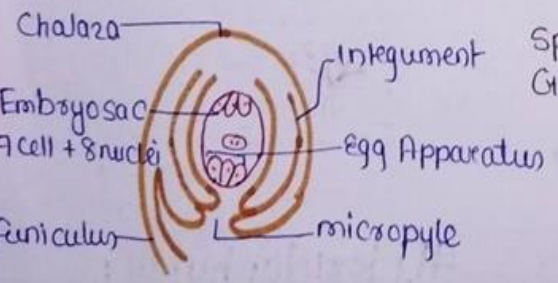
Dicot (2 cotyledon)	Monocot (1 cotyledon)
> tap roots	> Fibrous roots
> dorsiventral leaves	> Isobilateral leaves
> Reticulate venation	> trimerous flowers
> tetra, pentamerous flower	> Vascular system of stem.
> Vascular system of stem	> Conjoint & open.
> Conjoint & open	
> Cambium present 2° growth.	

Economic Importance
> taxol - anti cancer drug
> Ephedrine - cough
> Gums, terpentine, Resins

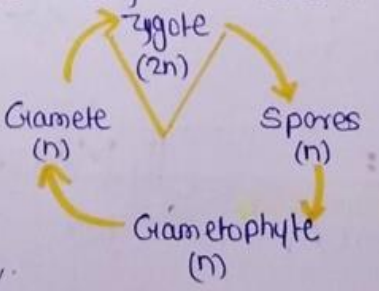


Diplontic lifecycle:
Sporophyte: multicellular, main plant body (2n)
Gametophyte: few celled (n)
Exception Fucus (Algae)





Haplontic lifecycle:
Sporophyte: zygote (single cell)
Gametophyte: mostly multicellular (main plant body)



eg. Algae, volvox
Spirogyra,
Clamydomonas.

Haplo-diplontic lifecycle:
Gametophyte & Sporophyte both multicellular.

Bryophyte	Pteridophyte
Gametophyte (main)	Sporophyte (main)
↓	↓
Sporophyte dependent	Gametophyte independent.

eg. Ectocarpus, kelps, polysiphonia.