YAKEEN NEET 2.0

2026

Plant Kingdom

Botany | Lecture – 06

Rupesh Chaudhary Sir

Topics to be covered

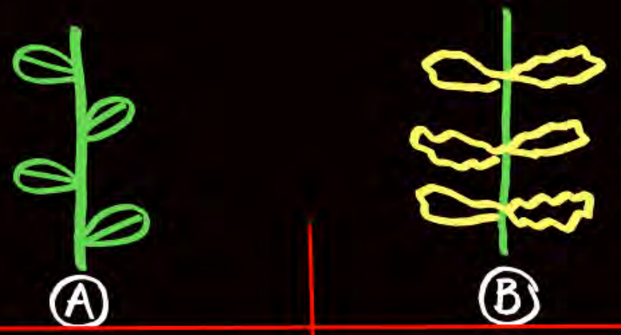
1. Classification.
2. Gymnosperm
3.
4.

Classification

Artifical

* Aristotle, linnaeus.

eg:



LEAF	A	B
Number	↓	↑
Colour	green	yellow
Shape	DIFFERENT	
HABIT	Evergreen	Deciduous (plant shed their leaf in autumn)

CRITERIA:

1. Morphological / External character / vegetative Character.
2. Based on one/few criteria (Four).

NOTE: LINNAEUS → Classification (Androecium structure)

Artifical ← (one criteria) (Reproductive Character)

Drawback

* Equal weightage to vegetative & Reproductive character But it was not correct
  - more conservative so least affected by environment.
  - adversely effected By environment

* seperated closely Related species & placed in different family on Basis of few criteria

Natural

* Bentham & hooker
* Based on Natural affinithes (similarity B/w organism)
* many chracter
* External & internal (cell structure, embryology, anatomy, phytochemistry (chemicals).

Phylogenetic

* Engler & prantl.
* evolutionary history/ancestor/inter-relationship B/w organism
* Need: fossil.
*  (common character: more. (placed in same family / same Taxon
  Solanaceae (Taxon)

NOTE: Classification Becomes difficult, if fossil not available

1. Cytotaxonomy: Chromosome structure, number, Behaviour
2. Chemotaxonomy: Chemical Constituent of plant (DNA sequence, Aromatic compound $CaCO_3$ crystal, Calcium oxalate etc).

③ Numerical Taxonomy / Phenetics

* 100 of character can be study with help of computers
* Equal weightage to all character.
* Codes (+/-) assign to each character.

Gymnosperm

* embryo, seed, vascular Tissue ✓
* Ovary/Fruit: X
* Only archegonia ✓

NOTE: Angiosperm

NOTE: Gymnosperm

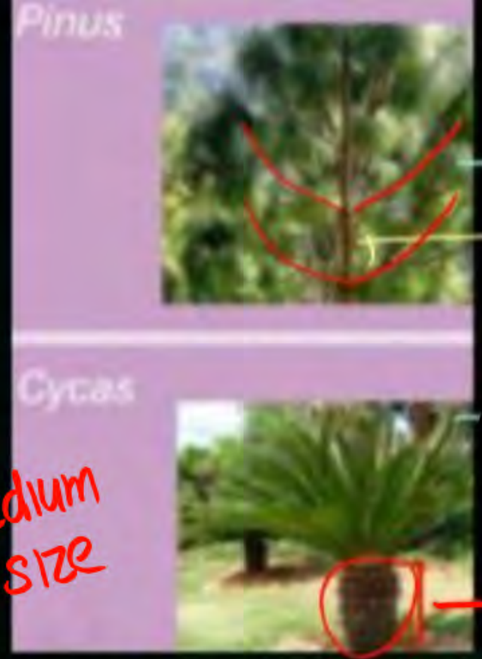
→ Ovule: Naked/Exposed NOT COVERED BY OVARY. → Seed: Naked NOT COVERED BY FRUIT.

→ OVARY ABSENT

* Tall Tree : Pinus
  Medium size : Cycas
  Shrub: Ephedra
* Tallest : Sequoia (Red wood Tree)

* Pinus: ROOT: fungus ✓ Mycorrhiza (symbiotic)
  → surface area increase
  → water, minerals absorption increase
* Cycas: special ROOT: COROLLOID ROOT (Negatively geotrophic)
  ↓
  N_2 Fixⁿ. ← Blue green algae (Anabaena)
* Pinus & Cedrus: STEM Branched
  Cycas: Unbranched.

* main Body : Sporophyte (2n) diff into ROOT, STEM, LEAF.
* All are hetrosporus : microspore & macrospore
  (male/small) (female/large)
* mostly dioecious (cycas) But Pinus monoecious



Tall

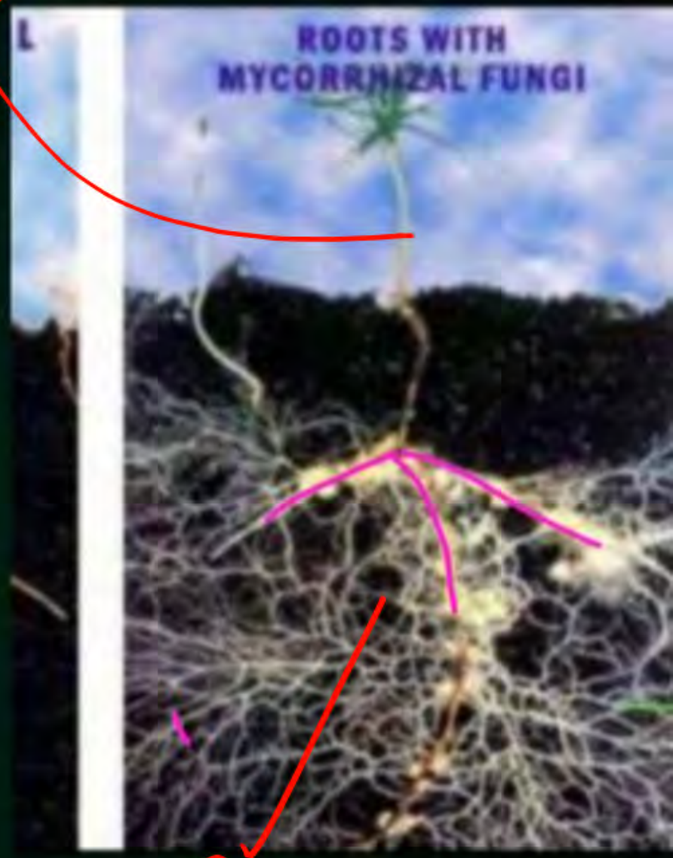
Branched (Pinus, Cedrus)

medium size

(Unbranched) stem

Tallest (Sequoia)

Pinus



fungi

Ephedra (Shrub)

Coralloid Root

Cycas

In the previous chapter, we looked at the broad classification of living organisms under the system proposed by Whittaker (1969) wherein he suggested the Five Kingdom classification viz. Monera, Protista, Fungi, Animalia and Plantae. In this chapter, we will deal in detail with further classification within Kingdom Plantae popularly known as the 'plant kingdom'.

We must stress here that our understanding of the plant kingdom has changed over time. Fungi, and members of the Monera and Protista having cell walls have now been excluded from Plantae though earlier classifications placed them in the same kingdom. So, the cyanobacteria that are also referred to as blue green algae are not 'algae' any more. In this chapter, we will describe Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms under Plantae.

Bacteria

Remove

Chlorella, Chlamydomonas

2 Kingdom.

Plantae.

Let us also look at classification within angiosperms to understand some of the concerns that influenced the classification systems. The earliest systems of classification used only gross superficial morphological characters such as habit, colour, number and shape of leaves, etc. They were based mainly on vegetative characters or on the androecium structure (system given by Linnaeus). Such systems were **artificial**; they separated the closely related species since they were based on a few characteristics.

Artificial

Also, the artificial systems gave equal weightage to vegetative and sexual characteristics; this is not acceptable since we know that often the vegetative characters are more easily affected by environment. As against this, **natural classification systems** developed, which were based on natural affinities among the organisms and consider, not only the external features, but also internal features, like ultra-structure, anatomy, embryology and phytochemistry. Such a classification for flowering plants was given by George Bentham and Joseph Dalton Hooker.

At present **phylogenetic classification systems** based on evolutionary relationships between the various organisms are acceptable. This assumes that organisms belonging to the same taxa have a common ancestor. We now use information from many other sources too to help resolve difficulties in classification. These become more important when there is no supporting fossil evidence.

Numerical Taxonomy which is now easily carried out using computers is based on all observable characteristics. Number and codes are assigned to all the characters and the data are then processed. In this way each character is given equal importance and at the same time hundreds of characters can be considered. **Cytotaxonomy**, that is based on cytological information like chromosome number, structure, behaviour and **chemotaxonomy**, that uses the chemical constituents of the plant to resolve confusions, are also used by taxonomists these days.

Mosses

(A) predominant stage is gametophyte

(B) first stage is leafy and second is protonema

(C) leafy stage develop from primary protonema as a lateral bud

(D) leafy stage consist of upright slender axis bear spirally arranged leaves

Mosses

(A) Rhizoids : multicellular unbranched with oblique septa

(B) protonema stage bear sex organ

(C) antheridia and archegonia at the apex of leafy shoot

(D) vegetative reproduction by fragmentation and budding in primary protonema

Mosses

(A) zygote develop into foot sets capsule, haploid structure

(B) sporophyte is less elaborate than liverworts

(C) spore formed after mitosis

(D) have elaborate mechanism of spore dispersal

(E) funaria, polysophonia, sphagnum

Pteridophyte

(A) soil binder

(B) ornamental

(C) medicinal

(D) all

Pteridophyte

(A) embryo absent

(B) vascular tissue present in gametophyte

(C) include horsetail (equisetum)

(D) dominant body is gametophyte

Correct

A. Small leaf in selaginella (macrophyll)

B. large leaf in ferns (microphyll)

C. Cones present in all Pteridophyte

D. sporophyll bear sporangia

E. sporophyll aggregate to form cone in selaginella only

F. sporangia produce spore by mitosis in spore mother cell

(A) 1 (B) 2 (C) 3 (D) 4

Correct

(A) prothallus : small, multicellular, inconspicuous

(B) prothallus - mostly photosynthetic, thalloid gametophyte, free living, independent

(C) gametophyte require cool damp shady place to grow so distribution is unlimited

(D) gametophyte bear antheridia and archegonia

Correct

(A) ~~all~~ mostly. Pteridophyte are homosporus

(B) mostly are homosporus

(C) zygote develop into ~~unice~~multi. llular sporophyte

(D) selaginella and salvinia are hetrosporus

B, D

Correct

(A) zygote develop into embryo in female gametophyte

(B) this event is precursor to seed habit

(C) it is important step in evolution

(D) female gametophyte retained on parent sporophyte for variable period

(E) microspore (large) & megaspore (small) form male and female gametophyte respectively

(F) All are correct except (E)

Special Announcement

YAKEEN NEET Batch Students

REAL TEST

REAL TEST SERIES-2026 IS LIVE

NTA Simulation Like Never Before!

Dropper NEET RTS 2026			
Total Tests	Online	Offline	Rankers Booklet
23	13	10	14

Scan To Enroll

- Happening in 250+ Cities.
- All India Ranking & Performance Analysis
- Paper Discussion with Faculties
- Real Exam Pressure & Setup

Homework from YAKEEN NEET 2.0 2026 Module

module : classifn

Question

THANK YOU