

# Topic: Equisetum; Morphology

B.Sc. Botany (Hons. ) I

Paper: II Group: B

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## Systematic position

Division- Sphenophyta

Class- Calamposida

Order- Equisetales

Family – Equisetaceae

Genus- *Equisetum*

## Occurrence:

The genus *Equisetum* commonly called as horse tail consists of about 25 species which are worldwide in distribution except in Australia and New Zealand. Most of the species are found in North temperate region. Some occur in tropical zone and *E. arvense* is cosmopolitan.

The species of this genus grow in different habitats but mostly they are found in damp and semi aquatic condition. The general occurrence is indicated by common name of different species e.g., *E. arvense* is found in grass lands in open and porous soil, along dry and sandy road sides; *E. palustre* grows in ponds or marshes or along the stream banks.

In India, common species are *E. debile*, *E. diffusum*, *E. arvense* and *E. remossimum*,

*E. debile* is the most popular species which grows abundantly along the banks of rivers in sandy and moist soils and in shady and swampy places.



## The Sporophyte:



The plant body of Equisetum is sporophyte. All the species are herbaceous perennials with widely creeping underground, much branched rhizomes from which the aerial branches arise.



The aerial shoots are usually annual but may be perennial. They range in height from a few centimeters to several meters but most of the species are generally one meter in height.



*E. giganteum* is the largest species and has 13 meters tall aerial stem. *E. debile* is 1 to 2 feet under xerophytic condition but it may attain 2 to 5 feet height under damp and shady condition.



## External features:

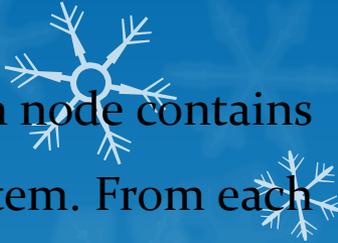
The plant body differentiated into stem (rhizome), root and leaves.



## Stem:

The stem of Equisetum is rhizome which is much branched and usually penetrates more





than 3 feet deep in soil. It is differentiated into nodes and internodes. Each node contains scale like leaves which are united at the base forming a sheath round the stem. From each node vertically erect Aerial branches grow upward. The Aerial branches may be branched or unbranched. The branches arise in whorls. All the branches and branchlets are distinctly differentiated into nodes and internodes. The internodes are ribbed and the number of ribs corresponds to the number of leaves. The aerial branches arising from rhizome are of three types-

- **Sterile branches-** They are green and much branched as in whorls at the nodes. They are large and without strobilus.
  - **Fertile branches-** They are non-green, unbranched and bear terminal strobili. They die after spore dispersal.
  - **Intermediate branches-** They are non-green and unbranched in the beginning but become green and branched after throwing off their mature strobili.
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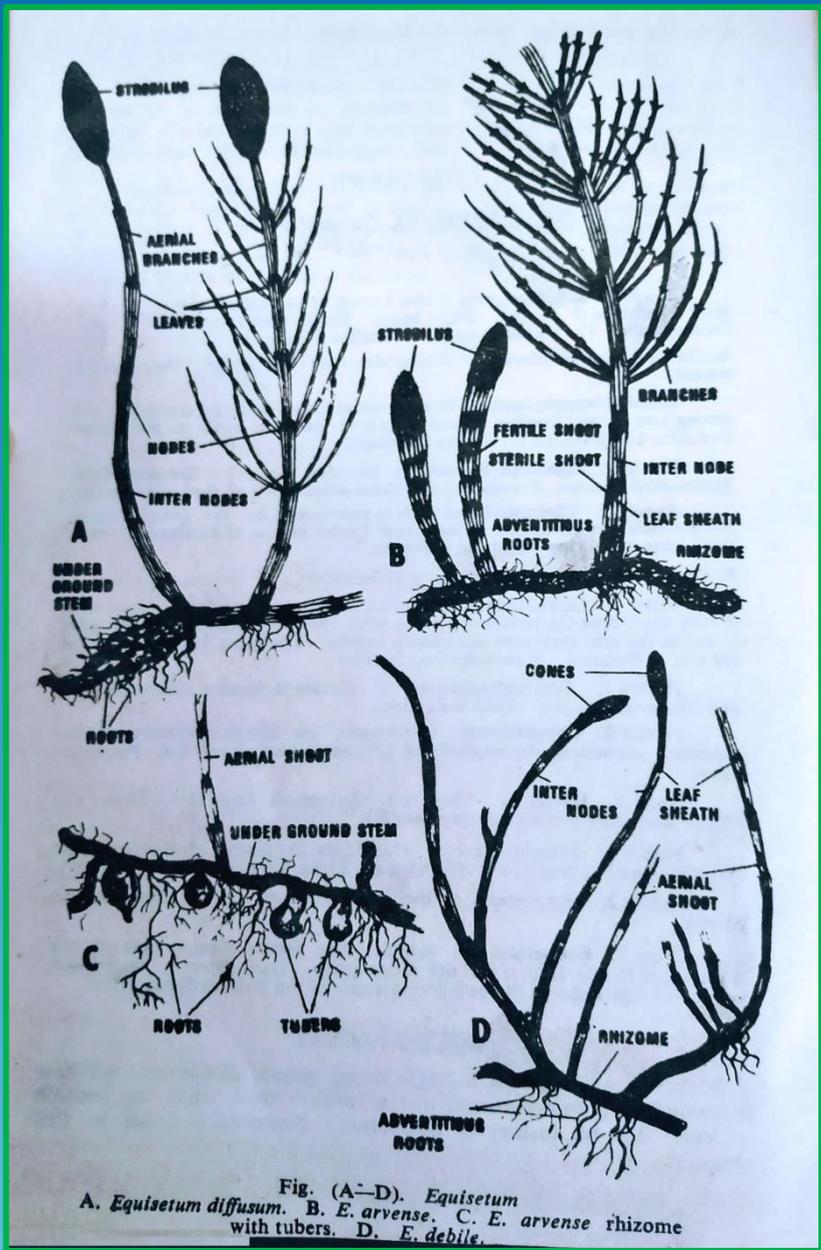


Fig. (A-D). *Equisetum*  
 A. *Equisetum diffusum*. B. *E. arvense*. C. *E. arvense* rhizome with tubers. D. *E. debile*.

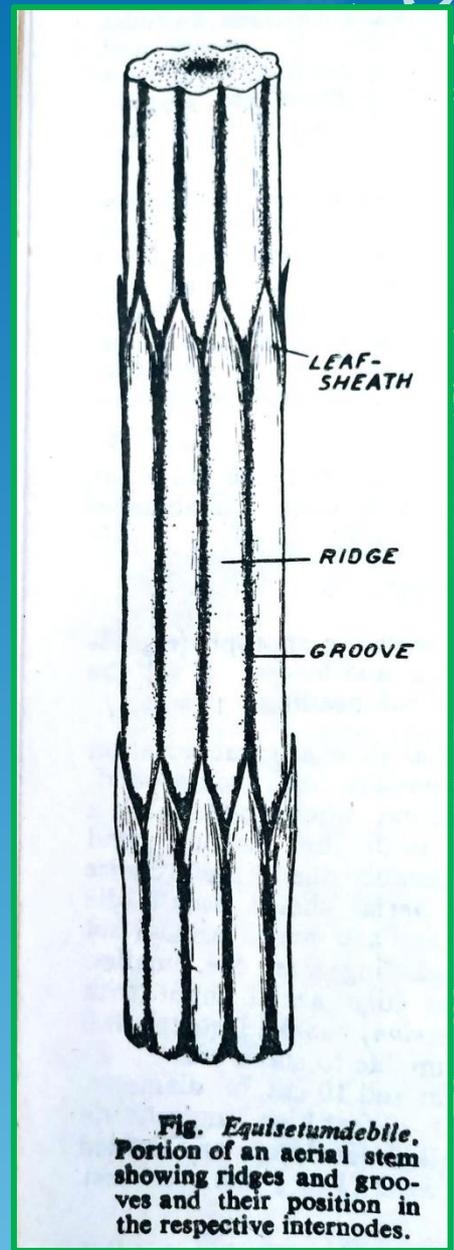


Fig. *Equisetum debile*.  
 Portion of an aerial stem showing ridges and grooves and their position in the respective internodes.

## **Leaf:**

The leaves are small, simple, and slender, scale like and unnerved. They are arranged in whorls and are fused at the base forming a brownish sheath which closely envelops the internode with shorter or longer teeth like tips. They are non-green and entirely protective in nature.

## **Root:**

The roots are adventitious and develop from the nodes of rhizome. They are slender, fibrous, borne in whorls, live for years but do not produce root system. They are rarely branched. They do not function of fixation, absorption of water and mineral salts. Sometimes nonfunctional roots also arise from the aerial branches.