

2)

3) The Plant Body / Sporophyte :-

Morphology :- Equisetum plants are usually 20 cm - 1.5 M tall. However, some species are such as E. giganteum (5m); and E. myriochaetum (8M) are giant horsetail.

The sporophyte of Equisetum is differentiated into stem, root and leaves.

i) Stem :- Equisetum possess two types of stem i.e. the underground stem and aerial stem.

a) Underground stem :- The main stem of Equisetum is underground, perennial, ridged and much branched. It is known as rhizome which gives rise to aerial stem during favourable conditions. It is differentiated into nodes and internodes and often lies more than a meter below the soil surface. There is a whorl of small scaly leaves at each node. The base of the leaves are fused with each other so that sheath is formed around the node.

Rhizome gives rise to two types of branches i.e. aerial and subterranean ^{tubers} that alternates with scale leaves. Subterranean tubers are perennating organ, and it develops into new plants on the return of favourable condition.

b) Aerial stem :- Aerial stems are profusely branched in some species (e.g. E. arvense) or may remain unbranched. In most species the main aerial stem is of limited size which is upto 10-60 cm tall. But in E. giganteum the height may be upto 5-8m. In most species aerial stems are of two types —

(i) Fertile stem/branch — they are colourless and unbranched with a strobilus/cone at the apex. However, in case of E. palustre the fertile stem is green and branched.

On LINE STUDY MATERIAL (e-content)

Name of the College: S.S. college, Jbad

Date: 21.08.2020

Name of the Deptt: Botany

Time: 11.00-12.00

Subject: Pteridophyta

Name of the Teacher: Dr. S.S. Sha

Topic: Equisetum

-rma
Class: B.Sc. Bot. II - PI

Medium of Teaching: Whats App &
College Web site.

Biotech Sub - PI.

EQUISETUM: GENERAL

1. Taxonomic Position:-

Kingdom — Plantae
 Pteridophyta
~~State~~ — ~~Terracophyta~~
Division — Sphenophyta
Class — Sphenopsida
Order — Equisetales
Family — Equisetaceae
Genus — Equisetum.

2. Habit and Habitat:-

Equisetum is represented by some 30 species.

~~It~~ ~~Equisetum~~ is the only living genus of the Family Equisetaceae, thus is also known as living fossil. The term Equisetum is derived from the Latin word 'equis' = horse + 'seta' = 'bristle'. The name "horsetail", is often used because the branched species resemble a horse's tail. The name "Snake grass" is given for unbranched or sparsely branched species.

(except Australia & New Zealand)
They are nearly cosmopolitan in distribution, but are most common in northern region of North America. Most of the temperate species are herbaceous and perennial plants but dying in winter. ~~on~~ on the other hand most tropical species and some temperate species are evergreen. They grow in a variety of habitats. Some species prefer damp and shady places (*E. pratense*) while others grow in marshy places, ponds or along sandy river banks.

ii) sterile stem:- they are green and form the vegetative part of the plant. ③

The stems are ridged and differentiated into nodes and internodes. Around each node sheath is formed by ~~leaves~~

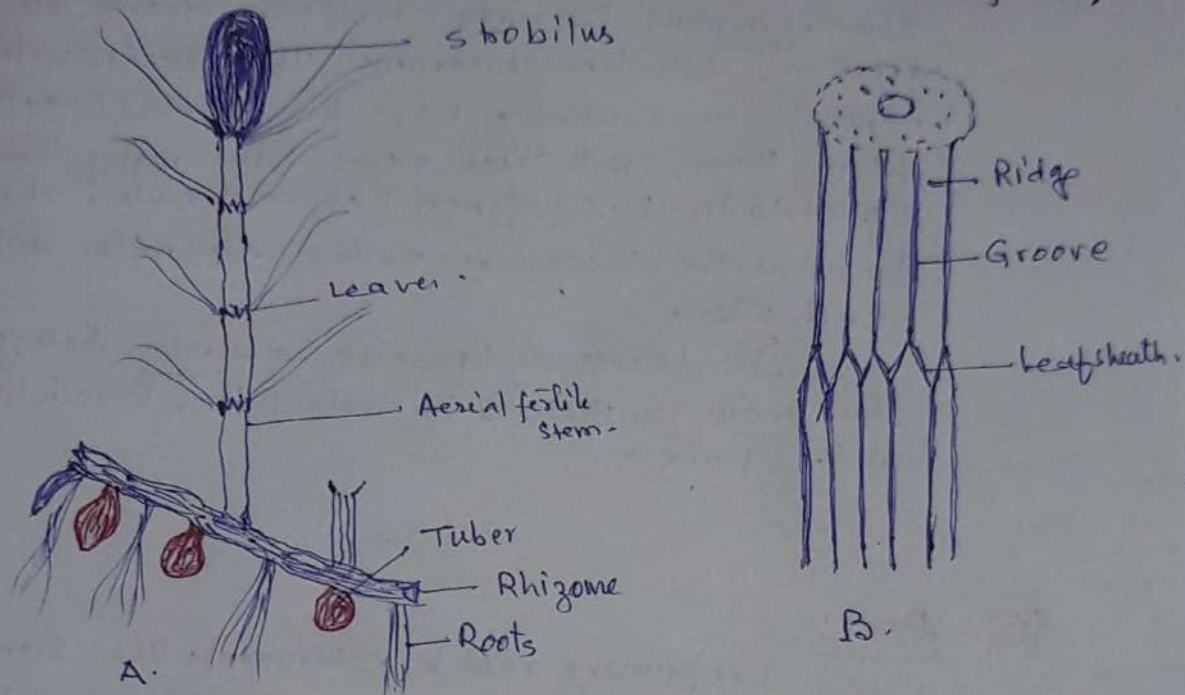


Fig (A & B). ^{A.} Equisetum: Rhizome & Aerial stem.
B. Portion of an aerial stem.

Ridges in successive internodes alternate with one another. The number of ridges corresponds to the number of leaves at the node.

Another important feature of stem is the presence of an intercalary meristem at the base of the internodes and just above the nodes.

In E. debile and E. diffusum there is no distinction between sterile and fertile shoots, here, all the aerial shoots bear strobili.

There is a deposition of silica on the outer wall of the epidermal cells which provides a protective covering against predators & pathogens.

(ii) Leaves:- The leaves are minute, scaly and isophyllous. They arise in whorl at the nodes of both the underground rhizome and aerial branch. The basal portions are fused to form distinct sheath around the node while the distal free ends give a ^{pointed} foil-like appearance. The species with narrow stems usually have few leaves (*E. sciropoides*) while those with thick stems have many leaves (upto 40 in *E. schaffneri*) at each node, the leaves at the successive nodes alternate with each other.

The leaves of *Equisetum* are non-photosynthetic. Their main function is to protect the ^{young} branch buds at the node.

(iii) Root:

The primary root is ephemeral. The slender adventitious roots arise endogenously at the nodes of the ~~stem~~ rhizomes or stem bases. They are much branched and fibrous type.