

**Topic: General characters of Pinus**  
**B.Sc. Botany ( Sub.) I**  
**Group: A**  
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### General Characters of Pinus

Systematic position

Division- Coniferophyta

Class- Coniferopsida

Order- Coniferales

Family-Pinaceae

Genus- Pinus

### **Distribution**

There are 80 to 90 species of *Pinus* spread in temperate regions of the Northern hemisphere. About 1/3 of the species are endemic to the old world and the rest in the new world. In India the genus is represented by the following species-

- i. *Pinus longifolia*- It grows at an altitude of 450-2250 meters in the hills of U.P., H.P.
- ii. *Pinus excelsa*- It grows at an altitude of 1200-3500 meters in the hills of North western Himalayas to Kashmir.
- iii. *P. armandi*- It is commonly found in Arunachal Pradesh at an altitude between 1200-3600 meters.
- iv. *P. merkusii*- It grows at a lower altitude up to 150 meters in Assam, Arunachal Pradesh and West Bengal.

### **Habitat**

The species of *Pinus* usually grow in the hill slopes and form extensive evergreen forests. S



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## Habit

It is a tall tree and reaches a height of 50-60 meters. The main stem varies in diameter from 15 to 30 meters.

## External features of the sporophyte

The plant which belongs to sporophytic generation is differentiated into root, stem and leaves.

## Root

It forms a tap root system. The main root may be long but usually it is shoot because the tree frequency grows on shallow soil. Usually the rocks, where it is impossible for a root to penetrate. To compensate this numerous strongly developed secondary roots arise from the main root and spread out over a large area, but rocks of the root penetrate deeply into the soil.

The root hairs are absent on the ultimate branches of the root. The *Pinus* have mycorrhizal roots and the roots are covered a symbiotic fungal mycelium.

## Stem

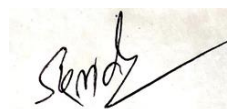
The main stem is branched. The branches are of two types-

i. **Branches of unlimited growth or long shoots:**

These are the ordinary or normal branches. They occur at regular intervals on the main trunks and are horizontal. They become gradually short or towards the apex. Hence the *Pinus* tree presents a pyramidal appearance. No older parts of the long shoots are covered and tears by the fallen dwarf shoots.

ii. **Branches of limited growth or dwarf shoots:**

Numerous dwarf shoots are developed on the long shoot in the axil of small brown scale leaves. The dwarf shoot consists of a shoot consists of a shoot axis terminating in a clusters of three green needles. Dwarf shoot is up to 1/2" in length and is covered with 10-12 scale leaves.



## Leaves

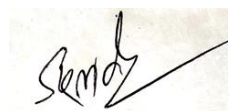
There are two kinds of leaves-

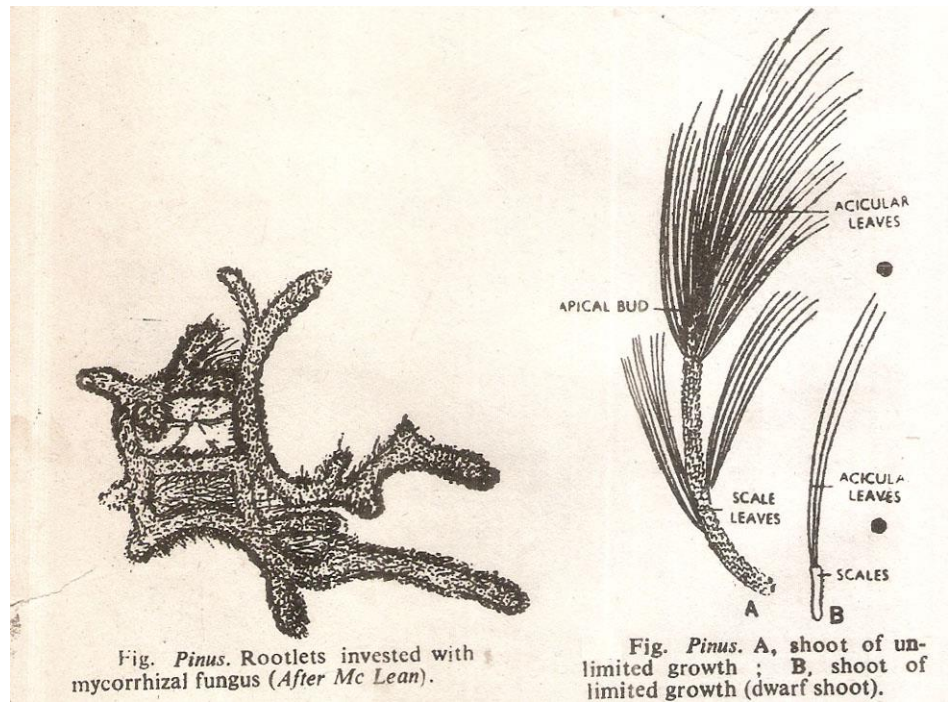
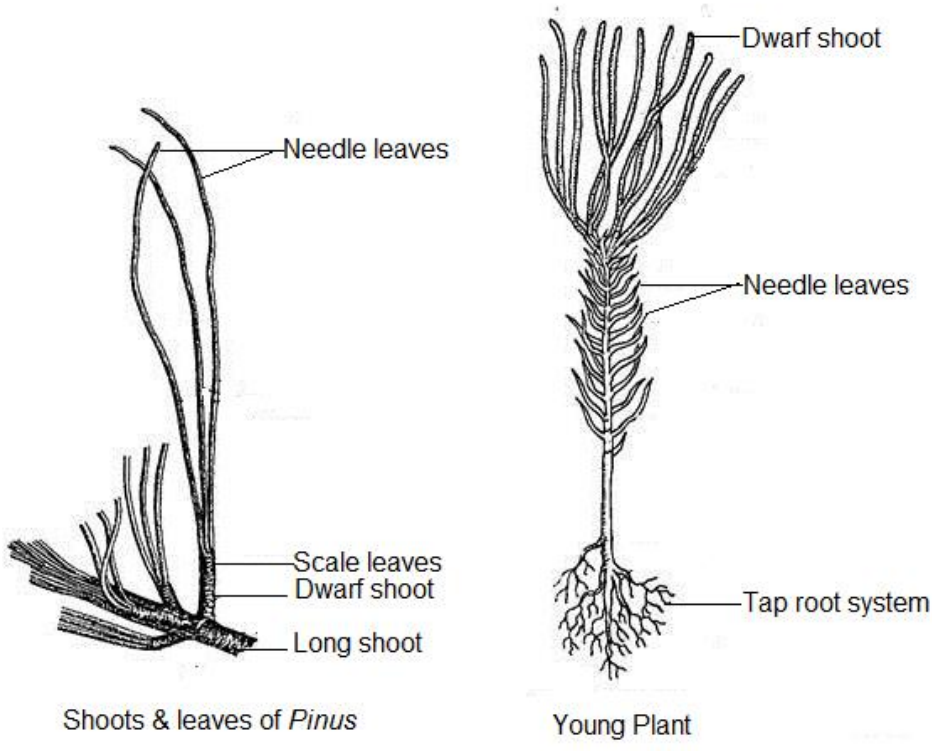
- (a) **Brown membranous scale leaves**- They are borne on both the branches.
- (b) **Green foliage leaves**- They are needle like to they are frequently known as needles. They never have borne directly on the long shoots. They occur only upon the dwarf shoots.

A dwarf shoot with its cluster of terminal green needles is called a foliar spur or spur shoot. Each spur shoot of *Pinus* bears a bundle of one to five needles in different species.

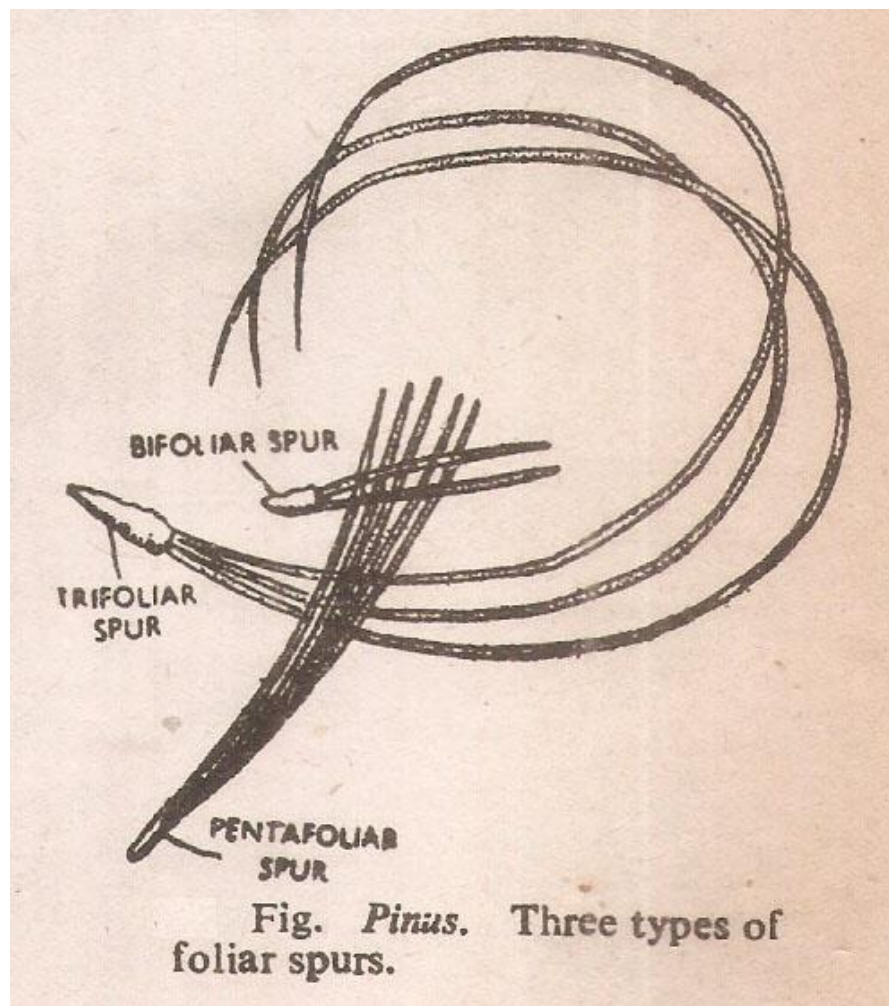
### Xerophytic Characters of leaves-

- i. The plant generally grows on slopes where the rain water easily drains off.
- ii. The cold of winter also interferes with efficient root absorption causing a physiological drought.
- iii. The transpiring surface is reduced.
- iv. The stomata are sunken.
- v. Cuticle is very well-developed
- vi. The hypodermis is sclerenchymatous and
- vii. The vascular system is well-developed.





*Sanjay*



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