

**3-THE CHARACTERISTICS OF
CUPRESSACEAE FAMILY,
LONG AND SHORT SHOOTS**

3. CUPRESSACEAE

The leaves are arranged either spirally, in decussate pairs (opposite pairs, each pair at 90° to the previous pair) or in decussate whorls of three or four, depending on the genus. On young plants, the leaves are needle-like, becoming small and scale-like on mature plants of many genera; some genera and species retain needle-like leaves throughout their lives.

Characteristics;

1. Members of the **Cypress family** are generally resinous and aromatic, and monoecious or dioecious, evergreen trees or shrubs.
2. The leaves are arranged either spirally or in decussate whorls of three or four. The leaves are needle-like or scale-like.
3. The male cones are uniform into the family, with the scales again arranged spirally, opposite or whorled. They borne singly at the apex of a shoot, in the leaf axils, in dense clusters, or on discrete long panicle-like shoots.

- 4. The female cones are either woody, leathery, or berry-like and fleshy, with one to several ovules per scale. The cone scales are arranged spirally, opposite or whorled.**
- 5. Seeds 1-20 per scale, not winged or with 2-3 symmetric or asymmetric wings. Cotyledons 2-5.**

1. GENUS CUPRESSUS

Leaves all scale-like, adpressed, imbricate, 4-ranked.



2. JUNIPERUS GENUS

Leaves on young branches acicular and rigid; mature leaves either acicular, rigid, jointed at the base, in whorls of three, or scale-like and decussate, rarely short, acicular and not jointed.



Short and Long Shoots

The genus *Pinus* is characterized by extreme dimorphism of shoots, represented by the short and long shoots with quite different morphologies.

Short shoots of *Pinus* bear foliage of secondary leaves (needles) arranged in fascicles and are unique among all gymnosperms and all groups of living plants.

The morphology of the long shoots of *Pinus* is also unique and distinctive, at least among the genera of *Pinaceae*, due to the generally clear delimitation and segmentation of shoots.

Classification of Fertile Long Shoots of Pines.

Fertile long shoots of pines divides into seven specific growth forms.

1. Uninodal:

An annual shoot formed by only one internodal segment arising during growth. The segment is ended by the node with a terminal bud and some lateral buds.

2. Addinodal:

An annual shoot formed by the main, relatively long internodal segment and an additional, distinctly shorter, second segment. The node at the end of the main segment usually bears lateral buds along with ovulate cones but lateral shoot segments.

3. Laterinodal:

An annual shoot formed by one internodal segment of the main axis with one or several short lateral parallel shoot segments situated around the terminal bud along with lateral buds.

4. Cryptonodal:

An annual shoot seemingly of the uninodal type. But, some or all lateral buds arise from the centre of the leaf fascicles situated around the base of the terminal bud.

5. Seronodal:

An annual shoot formed by the main internodal segment arising during spring growth and the second, younger segment arising during summer growth after a distinct growth pause.

6. Gradinodal

A shoot formed by the successive development of internodal segments as a result of interrupted growth, usually in number of 3–4 per year. At least at some of the nodes, the shoot ramifies during the first year. The terminal bud develops only before the distinct growth pause induced by the dry season.

7. Plurinodal

An annual shoot formed by several internodal segments of the main axis, usually of comparable length that arises during single spring growth.

Short Shoots of Pine Family

In mature plants the short shoot leaves are the only assimilating leaves. Typical short shoots in *Pinus sylvestris* have two needle leaves which are inserted on a strongly reduced short shoot axis.

Typical short shoots in *Pinus strobus* have five needle leaves.

Some specimens of Pinus sylvestris have apart from the typical short shoots with two needles several short shoots with a single leaf.

In *Pinus edulis*; long shoot with short shoots; typical short shoots have generally two needle leaves, in addition to typical short shoots with two needle leaves single leaf short shoots as well as short shoots with three needle leaves can be found.

Thanks ...