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Fig: *Cycas* Plant



Fig: Coralloid root of *Cycas*

Experiment No. 11.A

Aim of the experiment: To study the morphology of *Cycas*.

Work procedure

Study the external features of the plant. Observe the armour of leaf bases on the stem, absence of branching, crown of leaves, two types of roots, etc.

Comments/observations

1. Plant body is differentiated into an underground root system, an erect stem and a crown of leaves.
2. Roots are of two types (i) primary or normal root and. (i) secondary or coralloid root.
3. Normal root is a tap root, growing deep into the soil (positively geotropic).
4. Secondary roots are negatively geotropic projecting above the soil surface, repeatedly dichotomously branched and appear as coralloid clusters.
5. The young stem is almost tuberous but when grows old, it becomes thick, colummar and unbranched (Branching is rare and is caused due to injury, etc.). The trunk is covered by persistent leaf bases.
6. Leaves. The stem bears a terminal group of leaves which are dimorphic (i.e. of two types) (i) foliage leaves (green assimilatory fronds) and (ii) scale leaves (brown and hairy). These leaves alternate with one another.
7. Young foliage leaves are circinately coiled and are covered with ramenta (hairs).
8. Mature leaves are spirally arranged and pinnately compound. Each leaf has about 80- 100 pairs of pinnae that are closely arranged, opposite one another on the rachis with a decurrent base. Each pinna is tough, leathery and entire with a definite midrib but no lateral veins.
9. Scale leaves are small, simple, brown covered with hairs.
10. Reproductive organs. Cycas is dioecious and, as such, bears, either male cone or female reproductive structures.
11. The male cone is borne terminally at the apex of the stem and the further growth of the stem continues by axillary bud (developed at the base of the cone) which pushes the male cone on one side. The branching in *Cycas* stem is thus referred to as sympodial.
12. The female reproductive structures are the sporophylls developing in place of foliage leaves. The vegetative apex continues to grow as usual.
13. The sporophylls are smaller than the foliage leaves. They are brown or light brown in colour and are densely covered with wooly hairs.