Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

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Paper Title: Biodiversity II (Vascular Plants)

Unit: Pteridophytes

Module Name: Classification (up to family) and Morphology of *Selaginella*

Module No: 09

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Notes

Introduction to genus *Selaginella*

The genus *Selaginella* encompasses about 700 species around the world, 70 of which are found in India. It is commonly known as 'spike moss' and has a wide distribution. Most of the species prefer damp and shaded forest areas, however their presence in epiphytic to xerophytic habitats is not rare.

Xerophytic species of *Selaginella* are also known as resurrection plants because during the dry season they curl to form a ball-like structure which on return of moist conditions opens up to life again.

Classification and Taxonomic position

Division*:* Lycophyta

Class: Lycopsida

Order: Selaginellales

Family: Selaginellaceae

The order Selaginellales includes a single family Selaginellaceae which is represented by a single living genus *Selaginella.*

Morphology of *Selaginella* sporophyte

Most species of *Selaginella* are perennial in nature. However, some annuals are also known. An individual plant is a few centimetres in length. But, due to their prostrate and creeping habit they can sometimes run a few metres.

Plant stem in *Selaginella* is herbaceous in nature. The plant body is dorsiventral and creeping in most species. In a few species it is radial and sub-erect or erect. A climber species of *Selaginella* is known to possess special discoid pads on their rhizophores which helps them climb.

Sporophytic plant body

The sporophytic plant body is made up of:

1. **Root-** Primary root of *Selaginella* is ephemeral. The roots seen in adult plant are adventitiously formed. They are dichotomously branched with dichotomies at right angles to each other. They arise from the stem at or close to the point of stem dichotomy. In some, they arise from knot-like swellings at the basal portion of the stem. They may also arise from the distal end of rhizophores. Root tips have root cap and bear root hair.
2. **Rhizophore-** Rhizophore is *organ sui-generis,* which means it is neither root nor shoot. Rhizophores are long, cylindrical, unbranched and leafless structures that arise from lowerside of the stem at the point of dichotomy. They grow vertically downward and bear tufts of adventitious roots at their distal end. These are unique to genus *Selaginella* and are seen in only some species.
3. **Stem-** Stem of *Selaginella* is either erect and dichotomously branched or sub-erect or prostrate.
4. **Leaves-** *Selaginella* has microphyllous, sessile and simple leaves. They may vary in shape from ovate to lanceolate. Individual leaves have single central

unbranched midvein. The leaves are mostly arranged in 4 vertical rows with two on the dorsal side and two on the ventral side. Leaves on the dorsal side are smaller than those on the ventral side. In some species, the leaves may be isophyllous (same size) and spirally arranged.

5. **Ligule-** Ligule is a small membranous tongue-like projection that is present at axils of both, the vegetative leaves and sporophylls. A distinct hemispherical foot-like structure at basal part of the ligule is called glossopodium and the pit in which it is present is called ligular pit.
6. **Strobilus**- Strobilus is the sporangia bearing region of the sporophyte. It is present at the terminal end of the stem. It is made up of compactly arranged sporophylls (fertile leaves). At the axil of each sporophyll is present a sporangium together with a ligule.

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