

Dr. Rachana Shalini
Department of Botany
Course: Deg.-II(Hons.)
Paper: III
Topic: Pinus(contd.)
Lecture no.-25
Date: 27/04/2021

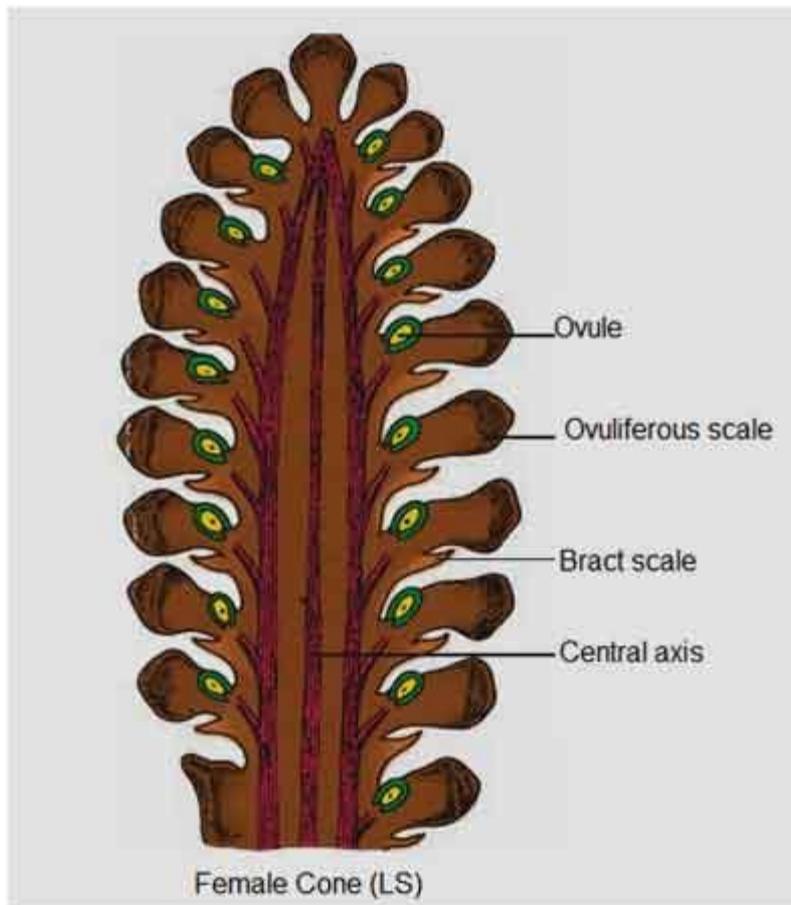
Female Cone (ovulate strobilus) of Pinus:

The female cones are larger and compound in nature. They are formed in clusters of 1-4 in the axils of scale leaves of long shoots. Initially, they are green but ultimately become brownish red in color. It starts to produce in winter and become ready for pollination during the spring. It is hard woody and dry structure. It bears a central axis upon which a large number of megasporophylls are arranged spirally.

Each megasporophyll has short stalk with a large ovuliferous scale on the upper surface and a small bract scale on the lower surface. Each ovuliferous scale bears two inverted megasporangia on its upper surface towards the base.

A microsporophyll consists of a short filament or stalk and a terminal leaf-like expanded structure while the apex is slightly bent upwards. Each microsporophyll bears two pouch-like microsporangia (anthers or pollen sacs) on its ventral surface. A microsporangium is sessile and oblong which is supported with a jacket of several layers of cells.

Each microsporangium produces a several microspores (pollen grains). The wall of each microspore is covered by inner intine and an outer exine. The microspores are winged and yellow in color. In this case, wings help in the dispersal of spores by wind.



The female cones are larger and compound in nature. They are formed in clusters of 1-4 in the axils of scale leaves of long shoots. Initially, they are green but ultimately become brownish red in color. It starts to produce in winter and become ready for pollination during the spring. It is hard woody and dry structure. It bears a central axis upon which a large number of megasporophylls are arranged spirally.

Each megasporophyll has short stalk with a large ovuliferous scale on the upper surface and a small bract scale on the lower surface. Each ovuliferous scale bears two inverted megasporangia on its upper surface towards the base.

Each megasporangium consists of a massive tissue which is called the nucellus and an envelope which is known as the integument. At the basal region, the integument is fused with the nucellus and open at the top by forming micropyle.

A single megaspore mother cell is differentiated within the nucellar tissue, which divides meiotically to form four megaspores. Of these four megaspores, only the lower most one is functional while others degenerate. The only functional megaspore increases in size and takes part in the development of the female gametophyte.