

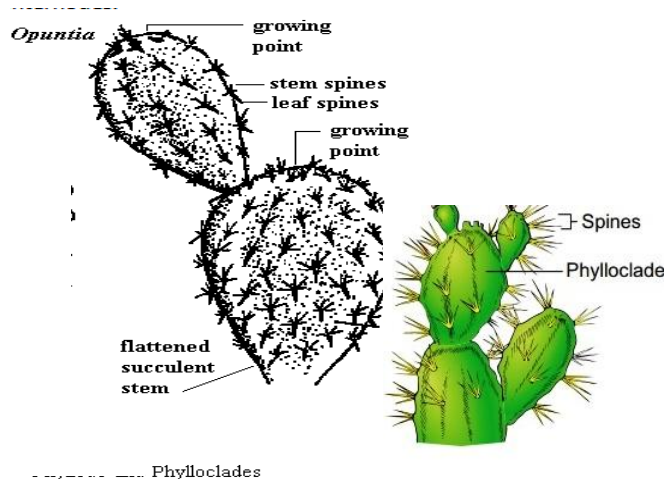
To study xerophytic adaptations in plants



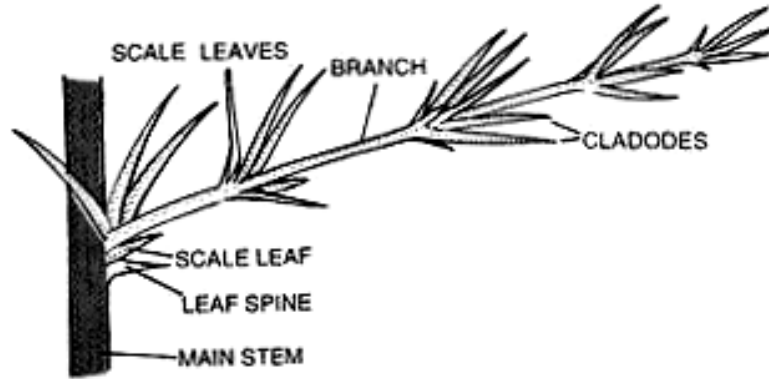
Opuntia elatior (Prickly pear)

Family: Cactaceae

- 1) *Opuntia* is a xerophyte.
- 2) Root system fibrous and much branched to absorb maximum surface water.
- 3) Stem succulent, fleshy, green with proliferated parenchyma called **phylloclade**.
- 4) It performs the function of photosynthesis and also stores water and mucilage.
- 5) Leaves are reduced to spines and serve the function of protection from animals, and also reduce transpiration rate.
- 6) The function of photosynthesis is taken up by flattened green stem (Phylloclade rather than leaves).
- 7) Cuticle thick and well developed.
- 8) Stomata on the stem open during night and closed during day, thus reducing water loss by transpiration.



Phylloclade of *Opuntia elatior*

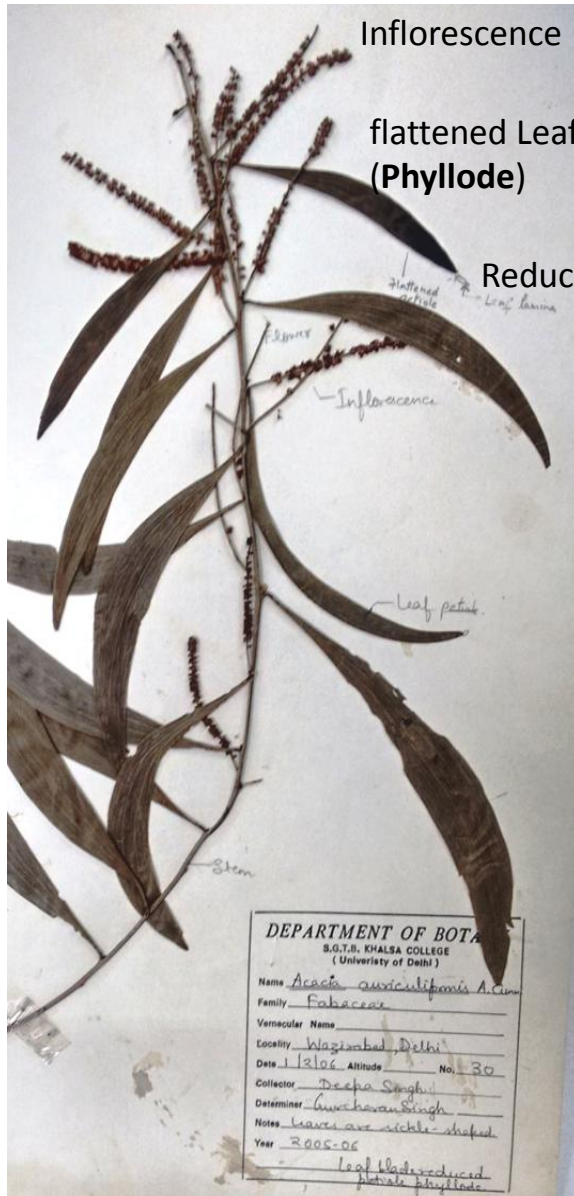


Cladodes of Asparagus racemosus

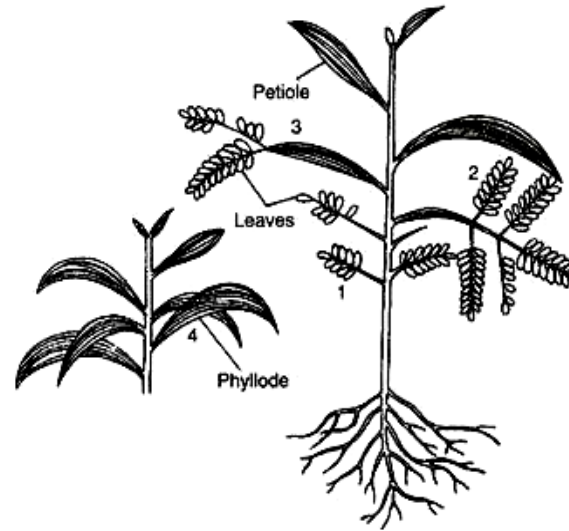
Asparagus racemosus

Family : Liliaceae

1. Xerophyte.
2. Leaves reduced and scale-like.
3. Branches axillary and in whorls, of one internode length, photosynthetic and appearing like leaves, the modification known as **cladode**.
4. Cuticle thick and shining to reduce transpiration.
5. Stomata sunken.
6. Sclerenchyma and xylem tissue very well developed.



Acacia auriculiformis

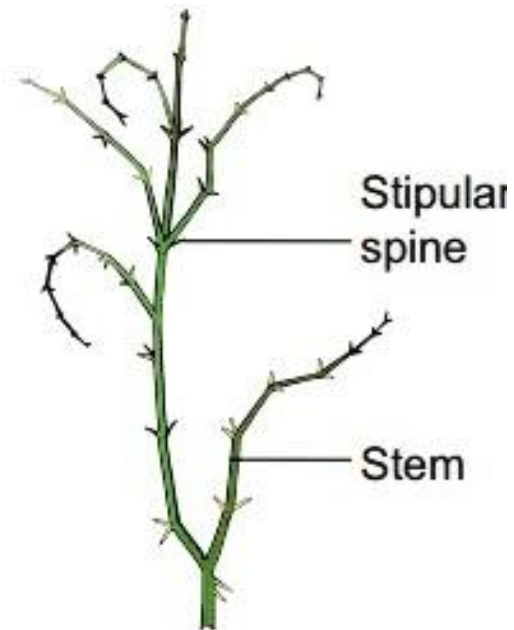
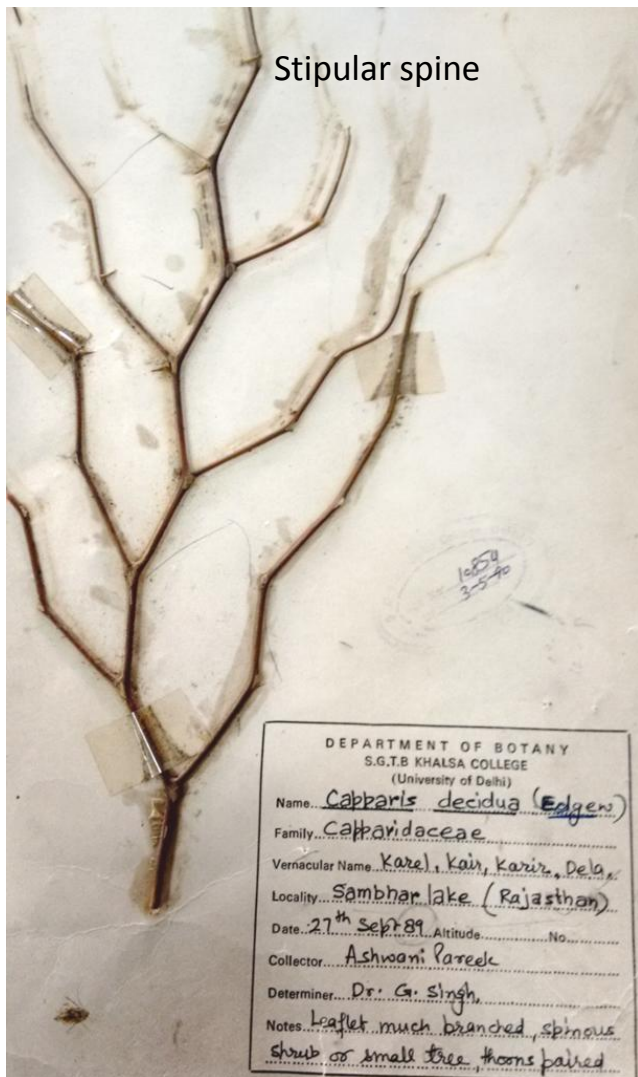


Acacia phyllode. Figs. 1, 2, 3 and 4 show the gradual loss of pinnae and development of phyllodes.

Phyllode of *Acacia auriculiformis*

***Acacia auriculiformis* (Australian Acacia)
Family : Fabaceae**

1. **Xerophyte.**
2. Leaf blade much reduced and pinnate, falling off in young leaf.
3. Petiole flattened to function as a leaf. Modification known as **phyllode**.
4. Phyllode with a thick layer of cuticle.
5. Phyllode thicker to increase inner leaf space.



Capparis decidua

Capparis decidua

Family : Capparidaceae

1. Xerophyte.
2. Root system deep and extensively developed to absorb water from deeper layers of soil.
3. Stem green, photosynthetic, branches narrow to minimize exposed surface.
4. Leaves small, ephemeral, appearing during favourable spell.
5. Cuticle thick and shining to reduce transpiration.
6. Stomata sunken.
7. Sclerenchyma and xylem tissue very well developed.