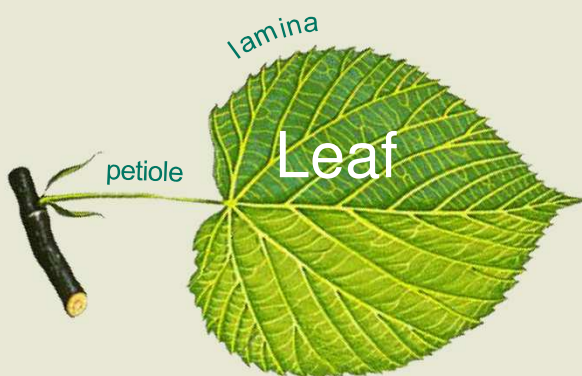
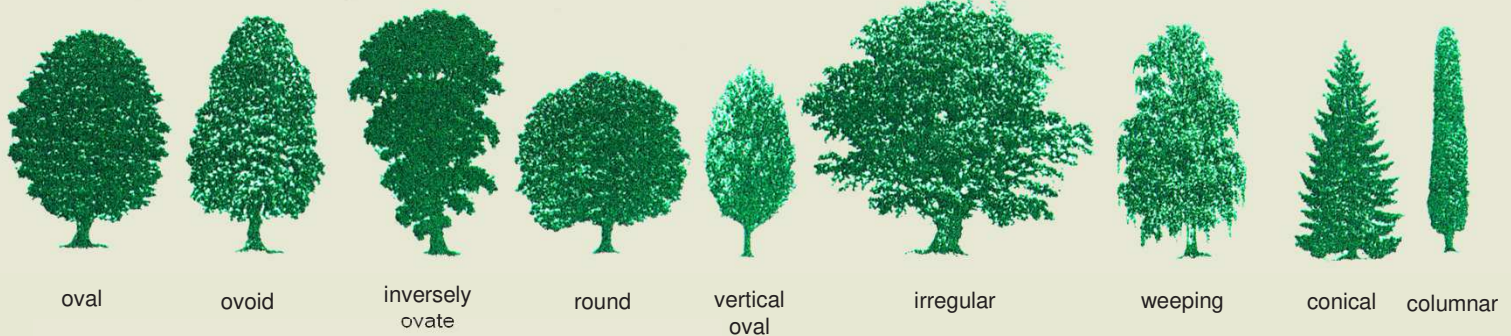




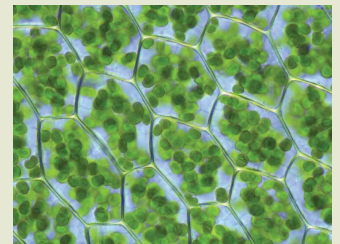
# Canopy and leaves

A canopy is a set of branches and leaves. The canopy of many trees and shrubs can be defined by a certain geometric shape.

## Tree shapes



**The leaf** is key in photosynthesis, harnessing sunlight via chlorophyll. Plants produce organic matter, their main food source, and energy. This sustains other organisms in ecosystems.



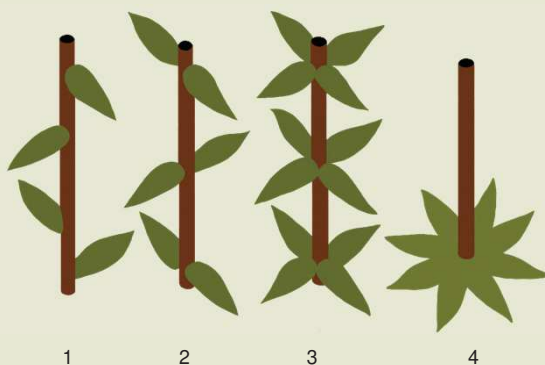
The main and largest part of the plant is the LAMINA. Leaves with a petiole are called pinnate leaves, and those without a petiole are called sessile leaves.



Stomates in leaf



Stomate of oak (*Quercus* sp.) leaf



## Leaves can be classified based on their arrangement on the stem

1. **Sinuous or spiral:** Leaves do not grow directly in front of each other but instead in a sinuous or spiral manner.
2. **Opposite:** Leaves that grow in pairs opposite each other on a stem or peduncle.
3. **Whorled:** Sessile leaves can cover the stem, be descending, or cover the stem and mature.
4. **Rosette:** An extremely dense arrangement of leaves where they all appear to grow from a single point on the shoot axis. This impression is created because the shoot axis is very short.



## Type of leaves

• **Simple leaves** - leaves that consist of a single blade attached to the stem or petiole:

1. **Linear**: shaped like a long strip with parallel edges (found in plants of the bellflower and sedge families).
2. **Lanceolate**: elongated and tapered at both ends, with a length 3-4 times greater than its width (found in willow, sea buckthorn, narrow-leaved willow).
3. **Elliptic**: regularly elliptical in shape, with a length about 2 times greater than its width, and blunt or slightly pointed ends (found in buckthorn, common dogwood, cherry, climbing honeysuckle, and forest apple).
4. **Circular**: its diameter is the same in all directions (found in aspen, burning nettle, common hazel, and common frogbit).
5. **Ovoid**: elongated, with the base wider than the top (found in grey alders, pears, hornbeams, blueberries, and dead-nettles).
6. **Obovate**: the top is wider than the base of the leaf (found in common oak, black alder, and primrose).
7. **Rhombic**: tapered at both ends, widest in the middle (found in silver birch).
8. **Spatulate**: narrowed base with a blunt top (found in day's and cowslip primroses).
9. **Peltate**: circular leaf with the petiole attached to the middle (found in nasturtiums).
10. **Reniform**: heart-shaped base, blunt apex, and width greater than length (found in wild ginger and caltha).
11. **Sagitate**: pointed tip, base with two perpendicular lateral blades resembling a spear tip (found in red sorrel).
12. **Hastate**: pointed apex, deeply indented base with two downward-going blades resembling an arrow tip (found in field bindweed).
13. **Pinnate**: leaf blade with blunt-tipped lobes (found in pedunculate oak).
14. **Palmately lobed**: leaf blade resembling a palmate shape (found in maple and meadow geranium).
15. **Palmately divided**: leaf division starting from the main vein (found in cranesbills and motherwort).

• **Compound leaves** - consist of two, three, or more separate leaflets, each with its own petiole.

16. **Trifoliate**: consisting of three leaves growing from the top of a common stem (found in stone bramble, clover, melilot, strawberries, and wood sorrel).

17. **Palmately compound**: a leaf consisting of more than three leaflets arranged along a common petiole (found in chestnuts).

18. **Pinnate with tendrils**: leaflets arranged in pairs with tendrils at the tip instead of a leaf (found in vetch, pea, and bean).

19. **Odd pinnate**: leaflets with a terminal leaf at the apex (found in rowan, ash, walnut, and boxelder maple).

20. **Bipinnate**: leaflets arranged in a compound manner, often appearing doubly branched or feather-like (smooth in appearance). (found in honey locust).

### Types of margins:

- 1 – entire, 2 – ciliate, 3 – dentate, 4 – serrate, 5 – daubly serrate, 6 – sinuate, 7 – lobate, 8 – spiny.

