30.4B: Types of Leaf Forms

Leaves may be categorized as simple or compound, depending on how their blade (or lamina) is divided.

Learning Objectives

• Differentiate among the types of leaf forms

Key Points

• In a simple leaf, the blade is completely undivided; leaves may also be formed of lobes where the gaps between lobes do not reach to the main vein.
• In a compound leaf, the leaf blade is divided, forming leaflets that are attached to the middle vein, but have their own stalks.
• The leaflets of palmately-compound leaves radiate outwards from the end of the petiole.
• Pinnately-compound leaves have their leaflets arranged along the middle vein.
• Bipinnately-compound (double-compound) leaves have their leaflets arranged along a secondary vein, which is one of several veins branching off the middle vein.

Key Terms

• simple leaf: a leaf with an undivided blade
• compound leaf: a leaf where the blade is divided, forming leaflets
• palmately compound leaf: leaf that has its leaflets radiating outwards from the end of the petiole
• **pinnately compound leaf**: a leaf where the leaflets are arranged along the middle vein

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### Leaf Form

There are two basic forms of leaves that can be described considering the way the blade (or lamina) is divided. Leaves may be simple or compound.

![Simple leaf](image1)  ![Palmately compound leaf](image2)

**Figure 1:** Simple and compound leaves: Leaves may be simple or compound. In simple leaves, the lamina is continuous. (a) The banana plant (*Musa sp.*) has simple leaves. In compound leaves, the lamina is separated into leaflets. Compound leaves may be palmate or pinnate. (b) In palmately compound leaves, such as those of the horse chestnut (*Aesculus hippocastanum*), the leaflets branch from the petiole. (c) In pinnately compound leaves, the leaflets branch from the midrib, as on a scrub hickory (*Carya floridana*). (d) The honey locust has double compound leaves, in which leaflets branch from the veins.

In a simple leaf, such as the banana leaf, the blade is completely undivided. The leaf shape may also be formed of lobes where the gaps between lobes do not reach to the main vein. An example of this type is the maple leaf.

In a compound leaf, the leaf blade is completely divided, forming leaflets, as in the locust tree. Compound leaves are a characteristic of some families of higher plants. Each leaflet is attached to the rachis (middle vein), but may have its own stalk. A palmately compound leaf has its leaflets radiating outwards from the end of the petiole, like fingers off the palm of a hand. Examples of plants with palmately compound leaves include poison ivy, the buckeye tree, or the familiar house plant *Schefflera sp.* (commonly called “umbrella plant”). Pinnately compound leaves take their name from their feather-like appearance; the leaflets are arranged along the middle vein, as in rose leaves or the leaves of hickory, pecan, ash, or walnut trees. In a pinnately compound leaf, the middle vein is called the midrib. Bipinnately compound (or double compound) leaves are twice divided; the leaflets are arranged along a secondary vein, which is one of several veins branching off the middle vein. Each leaflet is called a “pinnule”. The pinnules on one secondary vein are called “pinna”. The silk tree (*Albizia*) is an example of a plant with bipinnate leaves.