

## I. General information

### 1. anatomy of trees

Trees have a number of parts in their structure that divided into several groups. We can distinguish between **conservative organs**, **reproductive organs**, and **elementary organs**.

#### 1.1. Conservative organs.

Conservative organs provide each individual with the means to sustain its existence and preservation. The most obvious are the root, stem, buds, and leaves.

- **The root** is one of the tree's storage organs. It is hidden by the soil and always tends to grow toward the center of the earth. Its main function is to provide sustenance and storage for the individual. This organ is divided into three main parts:
  - ⇔ **The root collar:** This is the point between the root and the stem. It is from this point that the two organs originate and develop in opposite directions.
  - ⇔ **The Body:** This is the main part of the root. It originates at the root collar and extends into the ground.
  - ⇔ **The Feeder Roots:** which the tree uses to draw the fluids it needs for its existence from the soil.

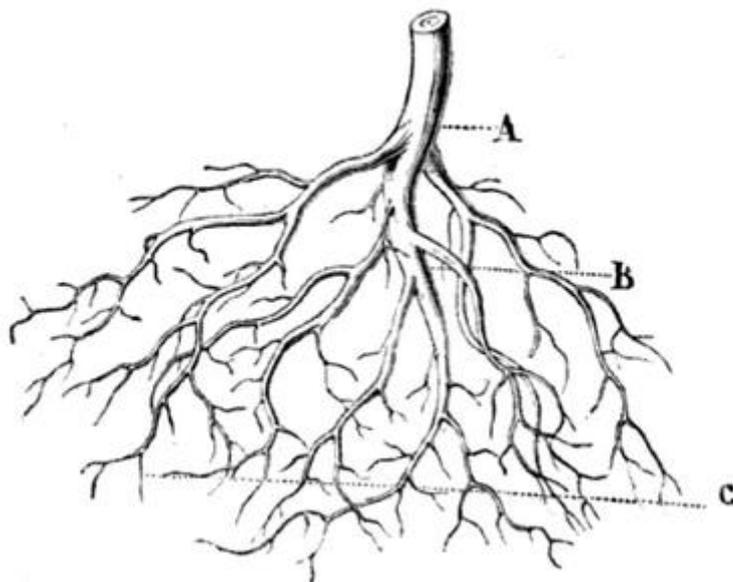


Fig1. The root. A: collar B: Body C: Feeder Roots. @ Alphonse Du Breuil

- **The stem** rises toward the sky. It consists of external organs (buds, twigs, branches, trunk) and internal organs.
- **Buds** are the first stage of development of tree branches. They emerge in spring from buds located in the axils of leaves or at the tips of twigs. They continue to grow throughout the growing season and retain the name “buds” until they stop growing in length.
- **Branch:** this is the second stage of development of the branches.
- **Leaves:** At budding time, which occurs around April, the base of the buds swells, causing the scaly envelope to open slightly: from then on, air and light penetrate to the young leaves, which turn green, strengthen, and unfold. The leaf has two usually distinct parts, the petiole and the disc.

### 1.2.Reproductive organs.

Flowers and fruits represent reproductive organs, because they contribute to the reproduction of the species.

- **Flowers:** The flower consists of floral envelopes and sexual organs.
- **The Fruit:** when fertilization is complete, the floral envelope and sexual organs wither and fall off. Only the ovary continues to grow and becomes the fruit. The fruit divided into two main parts: the pericarp and the seeds.

### 1.3.Basic organs (tissues)

The organs of a tree consist of several types of tissues, including parenchyma, sclerenchyma, collenchyma, meristematic tissue, and transport vessels (bark and pith), which play a fundamental role in transporting nutrients to all parts of the tree.

## 2. Definition of Arboriculture

Arboriculture is the cultivation of ornamental or fruit trees. Fruit tree cultivation can be for conservation purposes to grow old and rare varieties or for production.

## 3. Characterized of Arboriculture

Fruit tree cultivation involves creating and maintaining an orchard of fruit trees. It is characterized by:

- **It is a perennial crop:** trees can live for twenty, thirty, sometimes a hundred years... so it is fundamentally important to prepare the planting phase carefully
- **It is a crop that requires patience and good cash flow at the start of the project:** tree planting and maintenance are costly, and it takes up to 10 years for trees to reach their optimal yield. The aim is therefore to accelerate fruit production or adopt complementary production methods.
- **It is a profitable but risky crop:** once established, fruit trees produce high yields and provide a comfortable income for the arborist. However, everything can be lost in a single night of heavy frost while the trees are in bloom... It is therefore in the grower's best interest to choose a variety of species, particularly those that flower late, and even to incorporate frost protection into their production system.

#### 4. Getting started in arboriculture

##### 4.1. Choosing the right land

Make sure that the soil has characteristics that are favorable for growing fruit. It should be clay soil rich in organic matter; well-drained to avoid root suffocation; and deep to facilitate tree rooting.

##### 4.2. Choosing tree species

Species are chosen based on several factors. First, is this species suitable for the soil type and climate?, Will it remain suitable after a few years, given climate change projections? Does this species have a potential consumer market?

##### 4.3. Choosing the variety and taste

Fruit trees in the production system are grafted they consist of :

- **rootstock**, which includes the root part, chosen for its strength and ability to adapt to different soil types,
- **scion grafted** onto the rootstock in the nursery and chosen for its taste, aesthetic qualities, ease of cultivation, or resistance to certain pests.

Before planting, gather as much information as possible from the tree nursery about the varieties available: which cultivar to choose? Which rootstock?