

# Propagation

## Types of Propagation

- **Sexual (seed)**
  - Involves floral parts of the plant
  - Union of pollen and egg
  
- **Asexual (vegetative)**
  - Regenerate part of a parent plant into a new plant
  - Genetically identical to its one parent
  - Involves stems, roots, or leaves

# What is the difference between sexual and asexual propagation?

- **Sexual propagation**

- Reproduction of plants with the use of seeds
- Requires the union of pollen and egg to produce the seed
- Requires extensive research to get best crossing of plants for the desired outcome
- May require years to produce the desired seed

# What is the difference between sexual and asexual propagation?

- **Asexual propagation**

- **Reproduction of new plants from existing stem, leaf or root of parent plant**
- **No seed is formed**
- **Produces an exact duplicate of the parent plant called a clone**
- **Can produce new plants from plants that are difficult to produce from seed**

## **Advantages of seed propagation**

- Seed is easy to transport.
- Less cost, skill and work are needed to raise fruit trees from seedlings.
- You can graft or bud the material later.

## **Disadvantages of seed propagation**

- Genetic material may not be uniform. Most seeds are pollinated by wind, bees or insects.
- seedlings will take 2 to 3 years longer than grafted or budded cultivars to produce the first fruits.
- Cannot save seeds from hybrids

# **We recommend seed propagation**

- Hybridization, plant breeding
- for rootstock propagation in the nursery
- for later top working in the field
- Plants not propagated by vegetative means:  
coffee, cacao, papaya,
- Self-pollinated , pure seeds : Nemaguard

Do not use the seed of improved cultivars for rootstock propagation. The local seedling trees are well adapted to your soils, climate and conditions and often are better rootstock.

# Seed dormancy

- **Quiescence:** seeds dormant due to abnormal conditions
- **Dormancy:** seeds dormant due to indigenous factors (genetic), seeds will not germ. Although conditions are optimal.

## **Types of seed dormancy:**

### **I. Primary dormancy (common):**

#### **1. Seed coat dormancy:**

**a. Physical dormancy: hard seed coat, Not permeable for water**

**b. Mechanical dormancy: hard seed coat, prevent embryo enlargement: walnut, stone fruitsc.**

**c. Chemical dormancy: presence of germ inhibitors: phenolic compounds, coumarin, ABA: Citrus, stone fruits, apple, pear, grapes**

**d. Impermeability of seed coats to gases: apple seeds/o<sub>2</sub>**



**2. Morphological dormancy:**

**Embryo not complete in growth**

**3. Physiological dormancy: controlled by balance btw  
promoters & inhibitors**

**4. Embryo dormancy: the embryo is dormant**

## **II. Secondary dormancy:**

**Occurs after seed collection, occurs due to env.  
Factors, this help to maintain natural recourses of  
plants.**

# Overcoming Seed Dormancy?

- **Seed coat**

- Often needs to be scarified, broken or softened

- **Embryo**

- May need certain temperature exposure called stratification

- **Secondary** : stratification, GA promoter, drying seeds,