

- I. Propagating from seed
 - A. The seed collector should know:
 1. **Where** sufficient seed can be located on plants of desirable form and development
 2. **When** seeds are ripe enough to gather and over how long a period collection can be made.
 - a. Ability to recognize maturity of the seed is of first importance. The color or general appearance of the fruit usually changes at the time the seeds ripen. It is necessary to recognize the earliest stage of ripening when a good yield of viable seed can be obtained. Unfortunately when fruits are fully ripe they may have shed most of their best seeds, or may have been eaten by birds or animals.
 - b. Examples of species and season of collecting:
 1. Spring: Cottonwoods, Red Maple, Silver Maple, Poplars
 2. Fall: Catalpas, Magnolia, Dogwood, Camellia, Oaks
 - B. Extraction and cleaning of seeds after gathering
 1. **Dry seeds** may be thrashed from pods, etc.
 2. Soak **waxy seed** in soda water (1 tsp. per qt. of water) until coats are soft (3-5 days). Wash clean on screen with running water.
 - C. Seed germination has 3 basic requirements
 1. The seed must be **viable** - the embryo must be alive!
 2. The seed must be subjected to **favorable environmental conditions**. These are:
 - a. Available **water** - germination begins when the seed absorbs water and continues until the radicle emerges
 - b. proper **temperature**
 - c. supply of **oxygen**
 3. Any internal conditions which prevents germination must be overcome.
 - D. Treatment of seed prior to sowing
 1. Perfectly sound and uninjured seed of many tree and shrubs often fail to germinate even when conditions of temperature, moisture, oxygen and light are suitable. Such seed are called **dormant**, and special treatment to induce germination is required or in connection with sowing.
 2. Two main causes of seed dormancy
 - a. An impermeable or hard **seed coat** which prevents water and oxygen from reaching the embryo or in some cases prevents the embryo from breaking through the seed coat.

- b. **Internal** conditions of the embryo or stored food within the seed prevents germination.
- 3. Breaking Seed Coat Dormancy
 - a. **Acid treatment** - concentrated H_2SO_4 - immerse 10-20 minutes - **rinse thoroughly** (Must have a vented hood)
 - b. **Hot water treatment** - water brought to boil - seed immersed and allowed to soak 12 hours.
 - c. **Notch with knife or crack with hammer**, etc. - take care not to damage embryo
- 4. Internal Dormancy
 - a. Seeds having internal dormancy usually are dispersed in the autumn, lie on the ground, often partially covered with leaf litter over winter and germinate in the spring. Some may lie 2-3 years before germinating.
 - b. Cold stratification is a method used to overcome dormancy
 - 1. Adequate moisture.
 - 2. Adequate oxygen
 - 3. Temperature 40° to $45^\circ F$ for 20 to 120 days
 - a. Moisture - retaining medium - sand, peat, etc.
 - b. Containers - pots, flats, boxes, etc.
 - c. Place seed in layers, separated by cheese cloth, between media.
 - d. Length of time depends on species -
Magnolia 2 months at 40° - Dogwoods
100-130 days at 40°
- 5. Some species have both seed coat and internal dormancy -
Redbud - H_2SO_4 15 to 30 minutes - 90 days stratification

E. Sowing seeds

- 1. Greenhouse in flats
 - a. Use medium
 - b. Clean flats
 - c. Sow in rows
 - d. Cover 2-3 times seed diameter
 - e. Germinate under mist or cover with glass or plastic
 - f. Some seed require total darkness
 - g. Soil temperature of $65-70^\circ F$
- 2. Beds or cold frames
 - a. Well drained medium
 - b. Low fertility
 - c. Free of weeds or diseases (steam or chemically sterilize)