Propagation of Trees, Shrubs, and Edible Ornamentals

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Two types of propagation

- Sexual propagation
  
  from seeds
  
  .... Get genetic variation

- Asexual propagation
  
  from cuttings, layering, budding, grafting, and tissue culture

  ... Genetically identical
Seed propagation

• Seeds are readied for propagation in several ways...
  – Sometimes, no pretreatment is needed
  – Pre-treatment can include:
    • Cold Stratification
    • Scarification
    • Cold Stratification and Scarification
Pretreatment

Cold Stratification

• “….process of pretreating seeds to simulate natural winter conditions that a seed must endure before germination”


How it’s done....

• Moist media
  – Sand
  – Peat moss
  – Vermiculite
  – Perlite

• Insert in plastic bag

• Refrigerate 30 to 120 days

• Or... can be done outside, buried in soil, over the winter
Pretreatment

Scarification

• “Any process of breaking, scratching, or altering the...seed coat, through chemical (or mechanical) or thermal methods to make it permeable to water and gases...”


How it’s done...

• Chemical
  – Sulfuric acid

• Mechanical
  – Good method for the homeowner...
  – Use sandpaper or a knife to abrade the seed coat

• Thermal
  – Soak the seed in hot water
Sowing seeds

• Using the propagation mix
  1:1:1 Peat Moss : Pine Bark : Rice Hulls
• Sow into seed flats or directly into pots
• Cover with vermiculite
• Germinate in greenhouse 1-2 weeks
Apache Plume

Needs no pretreatment
Damianita

Needs no pretreatment
Desert Willow

Needs no pretreatment
Vitex

Needs no pretreatment
Elderica Pine

Needs no pretreatment
Desert Bird of Paradise

Needs no pretreatment
Mexican Bird of Paradise

Needs Pre-treatment
Scarification with Hot Water
Oaks

White Oaks
Need no pre-treatment

• Takes the oak tree an entire year to produce the acorns
• Seed only viable for a few weeks

Red or Black Oaks
Need pre-treatment

• Takes the oak tree two years to produce the acorns
• Seed viable for longer period of time... a few months
White Oaks

Southern Live Oak
Need No Pre-treatment
Red or Black Oaks

Texas Red Oak

Needs Cold Stratification 60-90 days
Chinese Pistache

Needs pre-treatment
Cold stratification of 60-90 days
Arizona Ash

Needs Pre-treatment

Cold Stratification of 60-90 days
Mesquite

Needs Pre-treatment

Scarification with Hot Water
Mimosa

Needs Pre-treatment
Scarification with Hot Water
Texas Mountain Laurel

Needs Pre-treatment

Scarification with acid for 60 minutes
Honey Locust

Needs Pre-treatment
Scarification with acid for 60 minutes
Redbud

Needs Pre-treatment
Scarification with acid for 30 minutes
Cold Stratification for 60-90 days
Golden Raintree

Needs Pre-treatment
Scarification with acid for 60 minutes
Stratification for 60-90 days
One Seed Juniper

Needs Pre-treatment

Scarification with acid for 45 minutes
Cold Stratification for 60-120 days
Asexual propagation

**Cuttings**
- Dormant hardwood cuttings
  - Cottonwood
  - Willows
  - Sycamore (London Plane)
- Dormant conifer cuttings
  - Junipers
  - Cypress
- Softwood cuttings
  - Crepe Myrtle
  - Mexican Elder

**Layering**
- Simple Layering
- Air Layering

**Budding**
- T-Budding
- Chip Budding
Pomegranate

Dormant Hardwood Cutting
Undiluted Dip-N-Grow
Mexican Elder

Dormant hardwood Cutting
No Hormone
Grape

Dormant Hardwood Cutting
No Hormone
Fig

Dormant Hardwood Cutting

No Hormone
Spartan Juniper

Dormant Conifer cuttings
Undiluted Dip-N-Grow
Blue Ice Arizona Cypress

Dormant Conifer cutting
Undiluted Dip-N-Grow
Dynamite® Crape Myrtle

Softwood cutting
No hormone

Dynamite® Crape Myrtle
Lagerstroemia indica 'Whit II' P.P.# 10296
Cherry Sage

Softwood Cutting
Diluted Dip-N-Grow
Purple Smoke Tree

Softwood Cutting
Undiluted Dip-N-Grow
Simple Layering
Air Layering

The stem is girdled to induce root formation above the cut.

The girdled stem is covered with damp moss.

Aluminium foil or plastic sheeting is wrapped around the moss and tied at both ends. This cover is removed 2-3 months after tying or when the roots can be seen.
Air Layering
T-Budding
Chip Budding

1. Make a cut on the rootstock.
2. Insert a chip from the scion into the cut on the rootstock.
3. Wrap the joint with a tape.
4. Check for proper rootstock and scion growth.
5. Repeat the process for all desired plants.
Overview of Budding Process

• Bud is placed in late August
• It heals in about 2 weeks
• Budding tape is removed
• The following April, the bud is “forced”
• By early July, the top of the root stock is removed, allowing the new bud to grow into a new tree
That's all Folks!