




Gardening 101




Tree and Shrub Planting & Propagation

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Selection Considerations

- Environmental tolerance (zone)
- Distinction (shape, height)
- Cultivar
- Value
- Type





Environmental Tolerance

- Hardiness (zone)
 - Account for your microclimate, if any
 - Zone 3 (to -20F) 4 (to -30F) 5 (to -40F)
- Sun or shade
- Moisture or drought tolerant
- Soil pH, salinity
 - High salt reduces water uptake
- Elevation and exposure (N v. S)
- Drainage
 - Cobbled or sand v. clay





Environmental Tolerance

- Purchase from northern nursery
 - Adaptation
 - Elevation
 - Local nursery
 - Latitude
 - Length of season
 - Unforeseeable weather events
 - Chinook winds
 - Extended warm weather
 - Remove insulating snow
 - Awaken plants




Distinction



- Trees v. shrubs
 - Selection guide
 - 6' tall man
 - 12" trowel
- Dimensions affected by climate conditions
 - Shape
 - Height
 - Standard or dwarf




Distinction



- Selection Guide
 - Conifer
 - Any woody plant that bears shaped or modified cones
 - Coniferous shrubs
 - Coniferous trees
 - Broadleaf evergreens
 - Broad leaves held year around but not conifers
 - Creeping oregon grape
 - Kinnikinnick

- Selection Guide
 - Deciduous
 - Any plant that drops its leaves at the end of the growing season
 - Deciduous shrubs
 - Deciduous trees
 - Vines

Tree – single trunk
Shrub – multiple stems arising from the ground










Variety

- **Cultivar**
 - Grown under cultivation
- **Resistance**
- **From Nature**
 - Get permission
 - May have poorly developed root system
 - It's a risk
 - some survive
 - some do not survive

Value

- **Pollution control**
 - Reduce air particulate
- **Increase humidity**
 - Transpiration (1620 gal in a well-vegetated acre) on a sunny summer day
 - Reduce rain drop speed
- **Erosion control**
- **Noise reduction**
- **Photosynthesis - oxygen O²**


Value

- **Wildlife**
 - **Habitat**
 - Dense evergreens for nesting sites
 - Spruce, juniper
 - Thorny shrub protection from predators
 - Buffaloberry, barberry
 - **Food**
 - Fruiting shrubs
 - Highbush cranberry, buffaloberry, plum, elderberry, Russian olive (nuisance tree)






Value

- **Ornamental**
 - Aesthetic
 - Monetary (up to 20% of a home value)
- **Shelter belt**
 - Reduce home heating costs
 - Increase shade and home cooling costs
 - Shade trees
 - Up to 2.5° F cooler canopy
 - Bare ground surface temp
 - 140° F lowered by 35° F






Tree Types

- **Bare Root**
 - No soil around roots
 - Keep moist
 - Plant when dormant
 - Before bud break
 - Purchase small trees
 - Deciduous trunk smaller than 2" in diameter
 - Evergreens less than 2 ft tall
- **Container**
- **Balled and Burlap**
 - Handle with care
 - Roots delicate

For all, keep root collar above soil level





PLANTING Bare Root

Bare Root Steps

- **Don't let roots dry**
 - Only takes a minute to desiccate feeder roots
- **Dig a hole**
 - 12" greater than spread
 - 6" deeper than downward root extension
 - Rough sides of hole before planting
- **Spread roots**
- **Set at same depth prior to digging**
 - Check bark color
 - Watch for root collar
- **If grafted, don't bury graft**
- **Orient tree**
 - most branches toward prevailing wind
- **Place hose in bottom of hole**
- **Fill hole with dry pulverized soil**





PLANTING Bare Root

Bare Root steps continued

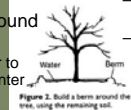
- Apply water to bottom of hole
 - Allow fill to settle
 - Allow air to escape
- Apply more soil as water shows through
 - Continue till final grade reached
- Do not add soil amendments unless poor soil
- Do not fertilize into planting hole
- Do not use foot to tamp soil around roots
 - DO compress lightly using hands



PLANTING Bare Root

Bare Root steps continued

- Add 3 to 4" of organic mulch
 - Pine bark or wood chips
 - Sawdust from mill
 - Crushed stone heats during winter and may heat up
- Prepare basin around tree
 - Don't allow water to accumulate in winter months
- Remove ¼ to 1/3 of leaves to compensate for lost roots
 - Don't prune central leader out of ornamental trees
- Provide support for plants over 6' tall
 - Leave slack for tree to move in wind
 - Strengthens tree



PLANTING Bare Root

Bare Root steps continued

- Wrap trunks
 - Protect against sunscald
 - Ground to first branch
 - Insects
 - Rodents
- Materials
 - Laminated Kraft paper, strips of burlap, aluminum foil, white latex paint,
 - Apply wrap in autumn
 - Remove in spring



PLANTING Bare Root

Bare Root steps continued

- Protect most for first two seasons
- Protect dark bark trees longer
 - Ash, birch, cherry, plum, some apple
- Protect from mice and voles
 - Keep tall grass and mulch 2" from trunk
 - Create cylinder of ½" mesh hardware cloth
 - 1" -2" below soil to lowest branch



PLANTING Balled & Burlap

Balled & Burlap steps

- Dig the hole
 - 1 foot wider than ball
 - Handle by root ball
 - Not stem
- Fill the hole
 - Loose pulverized soil
 - Top of ball 1-2" above soil surface
 - Water from bottom
 - Let settle



PLANTING Balled & Burlap

Balled & Burlap steps

- Cut twine and burlap from around the top of soil ball
 - Do not allow burlap exposure above soil
 - Do not remove from entire soil ball
- If wire, remove top 1 or 2 rings
 - Do not disturb root ball

Tree damaged by planting root collar below soil surface

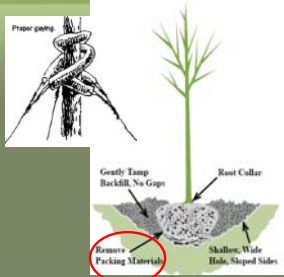




PLANTING Balled & Burlap

Balled & Burlap steps

- Fill hole
- Continue to water from bottom
- Mulch with 12" dry soil or organic mulch
- Leave soil basin
- Stake tree as necessary



PLANTING Container

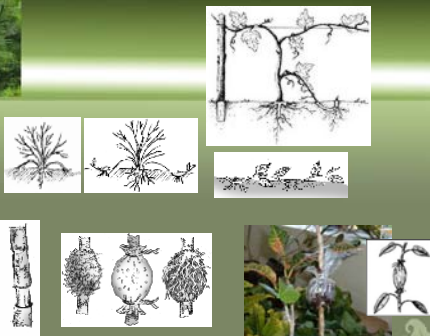
Container steps

- Cut away container
- If roots found on soil and root mass encircling soil
 - Spread into planting soil
 - Radiating out
- Follow procedures for balled and burlap



Propagation

- To multiply or increase by natural reproduction
 - Sexual Propagation
 - Seeds and spores
 - Asexual propagation
 - Suckering, cuttings, rhizomes, air layering, stolons or runners, ground layering, division, grafting, storage organs (bulbs, corms, tubers)



Propagation

- Suckering
 - Lilacs, aspen
- Rhizomes
 - Grasses, flowering plants
- Multiplying root structures
 - Bulbs, corms, tubers
- Stolons
 - Strawberries
- Cuttings (adventitious rooting)
 - Many trees and shrubs
- Layering
 - Used to create roots while still attached to parent plant





Leaf and Petiole Cuttings

- Leaf cutting (succulent and fleshy)
 - Broken houseplants placed in water may develop adventitious roots
- Petiole cutting (leaf stalk)
 - African violet, base of leaf and 1-2" petiole in growing medium



Softwood Cuttings

- Green tip cuttings (herbs, vegetables, flowers)
- Lilac, forsythia, viburnum, and potentilla
- Take 4-6 inch cuttings
 - Partly matured stem wood, not yet woody
 - Take more than you need to account for those that do not root
 - Take early in morning, stem tip turgid, not wilting
 - Keep track of top and bottom (don't try to root upside-down)



Softwood Cuttings

- Planting
 - Medium (sand, perlite, vermiculite, peat moss)
 - No one medium perfect for all plants
 - Try a 50/50 mix: sand-perlite, sand-vermiculite, perlite-peat moss, or sand-peat moss,
 - Porous, well-drained and firm enough to hold cuttings
 - Moisten medium and place in 5" deep container with drainage
 - Container with drainage holes
 - Remove leaves from lower 2/3 of cutting
 - Dip base in rooting hormone (nursery has liquid or powder)
 - Place cutting deep, leave 50% above media
 - Place pots in shady area
 - Could place clear plastic bag over cuttings to keep humidity inside
 - Begin checking after 3-4 weeks for rooting (gently pull and check resistance)
 - When they have several roots, transplant



Semi-Hardwood

- Deciduous and evergreens
- Take cuttings late summer / early winter
 - Artemesia, butterfly bush, geranium, lavender
- Cut 6" length and remove leaves from lower 1/2 of cutting
- Dip in bottom in hormone and strike into medium
- Place far enough apart so leaves do not touch or overlap
- Place pot in location that receives bright, indirect sunlight
- Place clear plastic over pot, if droplets form inside, remove bag.
- Again, look for roots and transplant when several roots have formed



Hardwood Cuttings


- Deciduous shrubs and trees
- Dormant wood
 - No active growth, February / early March
- 8" to 12" cuttings from current season growth
- Remove any leaves clinging to shoot
- Bottom cuts should be at an angle
 - This helps identify bottom
 - Dip in rooting hormone



Hardwood Cuttings



- Method 1 for easy to root plants (Willows)
 - Prepare a trench in the ground in fall
 - If cuttings 8", make trench 7"
 - Place cuttings in trench and backfill with soil and water
 - Check cuttings in the spring
- Method 2 for slower to root or where conditions harsh
 - Place in containers in a cold basement or cold frame
 - Make containers 3 1/2 to 4" deep or deeper, depending on cutting length
 - Insert cuttings 2/3 deep
- Method 3
 - Add rooting hormone and lay in black plastic
 - Cover rooting end with medium
 - Roll up and refrigerate till spring





Propagation Medium


- Sand
 - Cuttings can be grown in a sand culture
 - Once they start rooting they can be transplanted
 - They can only remain in sand for longer periods if provided nutrients


Propagation Medium




- Perlite
 - Volcanic rock / glass
 - pH neutral
 - When heated it expands to 15x its original size
 - Helps with aeration and drainage
 - Great water and nutrient holding capacity and





Propagation Medium

- Vermiculite
 - pH neutral but can vary
 - Depends on collection site
 - Association with carbonate compounds
 - Group of hydrated minerals
 - Aluminum, Iron, magnesium silicate
 - Clay is heated and expanded into accordion shaped granule
 - Shiny and golden

Propagation Medium

- Sphagnum peat moss
 - Moss that grows on the top of a peat bog
 - 150 to 350 species

