Pruning and Training
Small Trees and Shrubs

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Average Life Expectancy of
Street Trees

Downtown: 7 years
City Average: 32 years
Best City Site: 60 years
Rural Site: 150 years

Plant Selection
✓ One of the most important decisions
✓ Poor plant choices become maintenance problems
✓ Plant the right plant in the right place
✓ Use adaptable plants specific to site, whether native or not
✓ See UW-Extension Publication A-3864: Choosing the Right Landscape Plants: Factors to Consider at http://learningstore.uwex.edu

Prune based on client’s needs but keep in mind plant health and natural form of plant

Objectives of Pruning
✓ Control size
✓ Direct and train growth
✓ Influence flowering and fruiting
✓ Corrective pruning
✓ Maintain health and appearance
  • Remove dead, diseased, or damaged tissue
✓ Safety: hazard trees
✓ Rejuvenate old, overgrown plants
✓ Specialty pruning: topiary, espalier, pleaching, pollarding, bonsai

Principles of Good Pruning
✓ Always assess entire plant before making any cuts
✓ Never prune without a good reason
✓ Keep in mind growth rate of plant, form, mature height and width
✓ Don’t forget flower and fruit display
✓ All plants have a finite life, may not be worth rejuvenating half dead shrub
General Responses to Pruning

- Responds by making new growth elsewhere
- Stimulates budbreak at cut
- Response varies based on:
  - Growth habit
  - Plant age
  - Size
  - Timing
  - Severity of pruning

General Responses to Pruning

- Breaks apical dominance
- Removal of terminal shoot/bud
  - Sap flow stops to terminal
  - Shoots just below wound sprout
  - Related to reduced flow of auxin
  - Common example: pinching of tips of annuals causes bushiness
- Removal of lateral shoot
  - More terminal growth

General Responses to Pruning

- Cutting back hard into older wood
  - Only on suitable plants
  - Some plants may respond poorly with poor growth, no flowers, or die of shock
- Dormant buds at base of plant stimulated on some plants only

General Rules of Pruning

- Shrubs generally look their best with natural habit and size
- Well positioned pruning cuts
  - Key to restoring balanced outline
  - Maximizes flower and fruit display
  - Maintain plant health and vigor
- Remove unwanted growth when young!
- Clean pruning cuts
  - Close faster than if torn or bruised
  - Small as possible, prune regularly

Types of Pruning Tools

- Pruners: by-pass blade
  - Stems up to 1/2” in diameter
- Loppers
- Pruning saw
- Pole pruners: tall shrubs
- Hand shearing clippers: hedges, topiary
- Electric hedge trimmers
  - Safety glasses
  - Ear plugs
- Chainsaw: leave it to an expert!

Types of Pruning Tools

- By-pass type of pruners are best
- Anvil type of pruners: not recommended
Types of Pruning Tools
- By-pass type loppers
- Pruning saw

Tools Maintenance
- Clean and dry daily
- Final wipe with oily rag
- Sharpen often with file
- Disinfectant if pruning diseased plants
  - 10% bleach solution, rusts
  - Alcohol
  - Lysol: easy to use, no rust

Types of Shrub Pruning Cuts
- Heading back
- Renewal (selective thinning cuts)
- Rejuvenation: cut all the way back to within 4”-2’
- Pinching
- Deadheading: spent flowers
- Shearing: formal hedges

Heading Back: Removal of the terminal portion of a shoot back to a larger lateral branch or bud, reduces height, hides cut

Heading Back

Proper Pruning Cuts for Smaller Limbs
- Make pruning cuts about 1/4 inch above a bud and slightly angled away as shown at left.
### Heading Back Pruning Cuts
- Envision the direction of shoot growth that will result from pruning cut
- Avoid poorly shaped plants with crossing branches or crowded center
- Prune back to an outward facing bud
- If opposite, can prune back to buds or remove one of them, leaving outward facing bud
- Do not leave a stub

### Heading back cuts
- Most species tolerant to this type of pruning besides most trees:
  - *Chaenomeles* spp.: flowering quince
  - *Chionanthus virginicus*: fringetree
  - *Clethra alnifolia*: summersweet clethra
  - *Cotoneaster apiculatus*, *C. horizontalis*: cranberry and rockspray cotoneasters
  - *Daphne x burkwoodii*: daphne
  - *Diervilia lonicera*: dwarf bush honeysuckle
  - *Deutzia* spp.: deutzia
  - *Euonymus alatus*: burning bush

### Thinning or Renewal: Completely remove 1/3 of largest diameter branches back to the base of the plant on a yearly basis, opens it up, allows for new sucker growth

### Species Tolerant to Renewal Pruning: Suckering Shrubs
- *Aesculus parviflora*: bottlebrush buckeye
- *Aronia* spp.: chokeberries
- *Berberis thunbergii*: Japanese barberry
- *Cornus* spp.: shrub dogwoods, except for *Cornus mas*
- *Corylus americana*: American hazelnut
- *Forsythia* spp.: forsythias
- *Kerria japonica*: Japanese kerria
- *Ilex verticillata*: winterberry
- *Morella pennsylvanica*: northern bayberry
- *Philadelphus* spp.: mockorange
- *Physocarpus opulifolius*: eastern ninebark
Rejuvenation: Severely cutting back stems of shrubs, used on suckering, fast growing overgrown, leggy shrubs only

- Cut back to strong, large stems to redevelop main framework of branches, remove dead branches first
- Cut back entire plant to 3-12” from ground (depends on species)
- Do not prune below graft union
- Do in dormant season ONLY
- Can do gradually over several years
- Will produce numerous shoots from pruned stumps, thin to 2-3 per stump
- Species to rejuvenate heavily: shrub willows, elderberry

Rejuvenation

- Other species tolerant to rejuvenation: redtwig dogwood, potentilla, Japanese spirea, Annabelle hydrangea, Genista, smokebush, shrub roses (if some winter kill)
- Combine with thinning of older branches: potentilla and spirea
- Dieback shrubs: butterfly bush, Russian-sage, purple beautyberry, bluebeard, vitex

Pinching: Removal of tips of shoots to allow for lateral branches to break, increases bushiness of shrub

Deadheading: Removal of faded flowers, avoids fruit and seed formation, can encourage second flush of flowers

Shearing: For formal hedges only, new growth is sheared off to maintain tight, geometric form, higher maintenance

Cut back to an outward facing bud
**Shearing Rules:**
- Bottom of hedge should be wider than the top of hedge
- Do not continue to cut top of sheared hedge back to the original point of last year’s cut, get witches brooming, leave 1/2-1” of previous season’s growth

**Species Tolerant to Shearing**
- Produce latent buds farther down stem, tolerant of close clipping, dense habit, non-showy flowers or fruit
- Plant often grown for foliage only or as a screen
  - Berberis thunbergii: Japanese barberry
  - Buxus spp.: boxwoods
  - Cotoneaster lucidus: hedge cotoneaster
  - Euonymus alatus: burning bush
  - Ligustrum spp.: privets
  - Lonicera x xylosteoides ‘Clavey’s Dwarf’: Clavey’s Dwarf honeysuckle
  - Ribes alpinum: alpine currant
  - Taxus x media, T. cuspidata: yews
  - Thuja occidentalis: arborvitae
  - Tsuga canadensis: Canadian hemlock (young)
- NEVER shear Conus stolonifera, C. alba, C. sanguinea, very prone to stem canker

**Topping:**
- Removal of all the larger branches back to a certain height on trees or large shrubs, not recommended, very prone to decay, internodal cuts

**Timing of Pruning**
- To stimulate shoot growth: prune prior to budbreak
- To retard shoot growth: prune just after leaf expansion
- Never prune trees or shrubs during leaf expansion
- Don’t prune at time of planting except for damaged, diseased, or dead wood
- Prune during dry weather, if possible
Timing of Pruning: Dormant Season
- Best time to prune, can see form
- No diseases or insects active
- Required for oaks and elms
- Good for summer flowering plants
  - Produce flowers on current season’s new growth
  - Prune before flower buds develop
  - Late winter to early spring
- Season for rejuvenation pruning
- Cuts off flower buds on spring flowering plants, but can prune

Prune in Dormant Season: Summer or Fall Flowering
- Shrubs
  - Aesculus parviflora: bottlebrush buckeye
  - Buddleja davidii: butterfly bush
  - Caryopteris x clandonensis: bluebeard
  - Cephalanthus occidentalis: buttonbush
  - Clethra alnifolia: summersweet clethra
  - Cornus alba, C. stolonifera, C. sanguinea, C. racemosa, C. amomum: Tatarian, redosier, bloodtwig, gray, and silky dogwoods
  - Corylus americana: American hazelnut (no flowers)
  - Cotinus coggygria: smokebush
  - Diervilla lonicera: bush honeysuckle
  - Genista tinctoria: common woodwaxen
  - Hamamelis virginiana: common witchhazel
  - Hibiscus syriacus: rose-of-Sharon
  - Hydrangea macrophylla, H. arborescens, H. paniculata: bigleaf, smooth, and panicle hydrangeas

Timing of Pruning: Spring
- Quicker wound closure as bark is slipping
- Can do on summer flowering plants if done in early spring (mid-late April)
- Don’t prune until new, expanding growth has hardened off (June)
- Worst time to prune oaks and elms due to vascular wilts
- Many insects and diseases active
- Worst time of year to prune!

Timing of Pruning: Early to Mid Summer
- Not a good time to prune either
- Many diseases and insects active
- Retards further shoot growth
- But o.k. time for spring flowering plants
  - Produce flowers on previous season’s, older growth
  - Prune right after flowering
  - Early summer as if wait too long, next year’s flower buds are being produced
- Cuts off flower buds on summer flowering plants

Prune in Early to Mid Summer: Spring Flowering Plants
- Shrubs
  - Aronia spp.: chokeberries
  - Caragana arborescens: Siberian peashrub
  - Chaenomeles spp.: flowering quinces
  - Chionanthus virginicus: fringe tree
  - Cornus mas: Cornelian cherry dogwood
  - Cotoneaster spp.: cotoneaster
  - Daphne x burkwoodii: daphne
  - Deutzia spp.: deutzia
  - Forsythia spp.: forsythia
  - Fothergilla spp.: fothergilla
  - Hamamelis vernalis: vernal witchhazel
  - Ilex verticillata: winterberry
  - Kerria japonica: Japanese kerria

Prune in Dormant Season: Summer or Fall Flowering
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Prune in Early to Mid Summer: Spring Flowering Plants

- Shrubs
  - Kolkwitzia amabilis: beautyberry
  - Lonicera spp.: honeysuckles (non-invasive ones)
  - Philadelphus spp.: mockorange
  - Physocarpus opulifolius: eastern ninebark
  - Prunus spp.: cherry, plum, almond
  - Rhodotypos scandens: black jetbead
  - Salix spp.: shrub willows (can prune in late winter)
  - Syringa spp.: lilacs
  - Spiraea spp.: spring flowering spireas, not S. japonica
  - Symphoricarpos spp.: snowberry, coralberry
  - Viburnum spp.: viburnums
  - Weigela spp.: weigela

Timing of Pruning: Late Summer to Early Fall

- Second worst time to prune
- May stimulate late season shoot growth, won’t harden off (on species that flush growth several times normally in season)
- Slow to poor wound closure
- Many diseases and insects active
- Cuts off flower buds on spring flowering plants
- Best reserved for storm damaged plants only

Invasive Species Pruning

Best time to prune: late fall and immediately treat stumps with systemic herbicide

Proper Pruning Cuts

- Branch collar: trunk tissue that forms around the base of a branch
- Branch bark ridge: ridge of bark in a branch crotch that marks where branch and trunk tissues meet and can extend down tree trunk

3-Point Method of Larger Branch Removal: Leave branch collar and branch bark ridge alone

Pruning Spring Flowering Shrubs

- Heading back or thinning cuts (if suckering), do not shear
- Prune after flowering or when dormant
Pruning Summer or Fall Flowering Shrubs
- Heading back or thinning cuts (if suckering), rejuvenation, do not shear
- Prune in early spring or when dormant

Pruning Shrubs Produced on a Standard
- Training shrubs as standards
  - Clear, tall stem with shrub on top
  - Formal appearance, suitable for containers
  - Only certain plants suitable
  - Often topgrafted onto seedling rootstock
  - After first season, shorten laterals by half, encourage bushiness
  - Remove sprouts on main trunk and suckers
  - Prune to maintain neat, balanced head of foliage

Pruning Shrubs Produced on a Standard
- Non-grafted standards: train leading shoot from early age on clear stem, needs staking, due in stages
  - Shorten laterals
  - Remove laterals later
  - Once at desired height (3-5 1/2’), allow 3 more sets of buds to develop above 3-5 1/2’
  - Pinch out terminal bud
  - Encourages laterals to break
  - After first season, shorten laterals by half, encourage bushiness

Pruning Broad-leaved Evergreens
- Little pruning is needed, few heading back cuts
- Do not thin, often lacks latent buds on stem
- Growth from terminals
- Can shear boxwood only

Pruning Needle-leaved Evergreens: Pines
- Little pruning is needed
- Growth from terminals
- Prune to maintain compact habit
- Remove 1/2-2/3 of elongated candles before needle expansion in spring
- Do not thin or shear, often lacks latent buds on stem
Pruning Needle-leaved Evergreens:
Spruce, Fir, Douglas-fir
- Little pruning is needed
- Growth from terminal and lateral buds
- Prune tip of branch back to a lateral bud, can do when dormant
- In early summer, remove 2/3 of an unbranched tip to keep full
- Keep natural form, do not prune back into older wood

Pruning Needle-leaved Evergreens: Yews, hemlocks, arborvitae
- Shrubs with latent buds
- Heading back in spring to side branch or bud
- Head back or shear in late spring to mid summer after flush of growth (yews)
- Prune after new growth is hardened (lignified)

Pruning Needle-leaved Evergreens:
Junipers and falsecypress
- Shrubs without latent buds
- Heading back cuts to lateral branch, hide cuts
- Never rejuvenate or shear into older wood, stay out of dead zone, no shoots will develop
- Prune in late spring to early summer
- Plant in appropriate place away from sidewalks

Pruning Needle-leaved Evergreens: Dwarf Conifers
- Little pruning is needed, shaping
- Remove reversion shoots or else will dominate
- Color reversions normal on some

Unfortunate Pruning: deer browsing on arborvitae
- Slow to fill back in
- Does not regenerate quickly from old, inner wood, but will over a long time

Pollarding
Pollarding is not topping!
Wound wood forms a knob from which epicormic branches develop
Wounds are highly compartmentalized