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
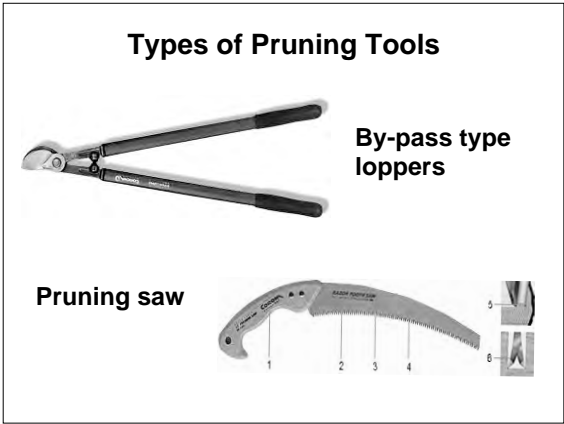 - Ear plugs
- ✓ Chainsaw: leave it to an expert!

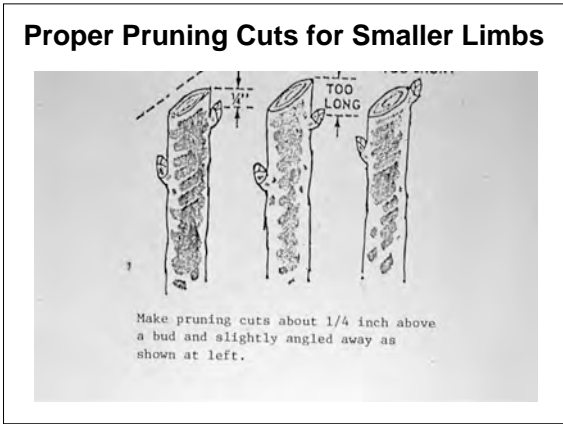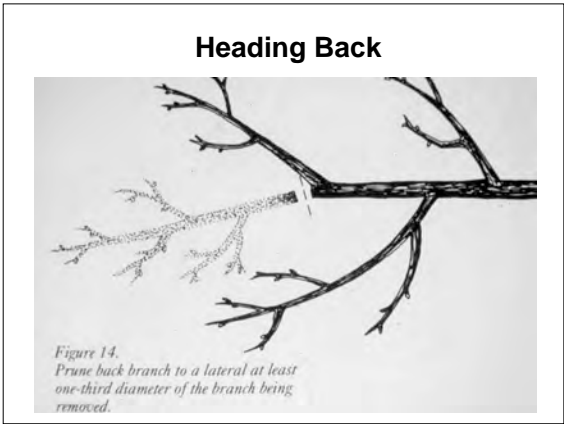## Types of Pruning Tools

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

Figure 14.
Prune back branch to a lateral at least one-third diameter of the branch being removed.

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
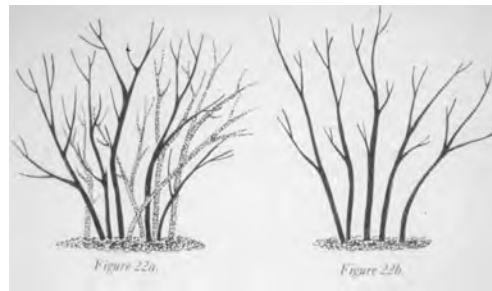- ✓ Do not leave a stub

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
  - *Diervilla lonicera*: dwarf bush honeysuckle
  - *Deutzia* spp.: deutzia
  - *Euonymus alatus*: burning bush

Heading back cuts

- ✓ Most species tolerant to this type of pruning
  - *Fothergilla* spp.: fothergillas
  - *Hamamelis* spp.: witchhazels
  - *Hibiscus syriacus*: rose-of-Sharon
  - *Hydrangea paniculata*: panicle hydrangea
  - *Hypericum kalmianum*: Kalm St. Johnswort
  - *Prunus tomentosa*: Manchu cherry
  - *Prunus triloba*: double flowering plum
  - *Syringa meyeri* 'Palibin': dwarf Korean lilac
  - *Syringa patula* 'Miss Kim': Miss Kim lilac
  - *Viburnum carlesii*, *V.* x *juddii*: Koreanspice and Judd viburnums
  - *Weigela* spp.: weigela

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

Figure 22a.   Figure 22b.

Species Tolerant to Renewal Pruning: Suckering Shrubs

- ✓ *Aesculus parviflora*: bottlebrush buckeye
- ✓ *Aronia* spp.: chokeberries
- ✓ *Berberis thunbergii*: Japanese barberry
- ✓ *Cornus* spp.: shrub dogwoods, <u>except</u> 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

Species Tolerant to Renewal Pruning

- ✓ *Potentilla fruticosa*: potentilla
- ✓ *Prunus* x *cistena*: purpleleaf sandcherry
- ✓ *Rhus* spp.: sumacs
- ✓ *Rosa rugosa*: rugosa rose (suckering types)
- ✓ *Salix* spp.: shrub willows
- ✓ *Sorbaria sorbifolia*: Ural falsespirea
- ✓ *Spiraea* spp.: spireas
- ✓ *Symphoricarpos* spp.: snowberry, coralberry
- ✓ *Syringa vulgaris*, *S.* x *hyacinthiflora*, *S.* x *chinensis:* common, early, and Chinese lilac
- ✓ *Viburnum dentatum*, *V. trilobum*, *V. opulus*, *V. lentago*, *V. lantana*: arrowwood, American and European cranberrybush viburnums, nannyberry, wayfaringtree viburnum

Rejuvenation: **Severely cutting back stems of shrubs, used on suckering, fast growing overgrown, leggy shrubs only**
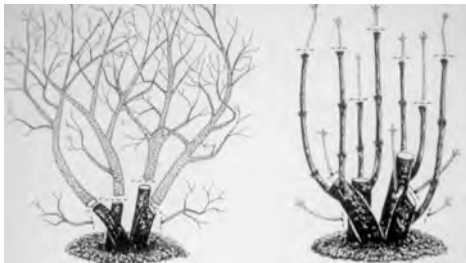

Figure 21a. Rejuvenation by severing stems at the base.

Figure 21b. Heading back and removing new canes.

Rejuvenation

✓Cut back to strong, large stems to redevelop main framework of branches, remove side 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**
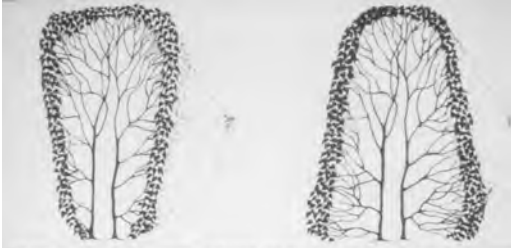

Cut back to an outward facing bud

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

Shearing Rules: Bottom of hedge should be wider than the top of hedge

The formal hedge, left, is improperly shaped. The top should not be wider than the bottom the right, a properly-shaped formal hedge. The top is narrower than the bottom.

Shearing Rules: 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

Do not shear plants that can produce showy flowers or fruit or lack latent buds (junipers)

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 *Cornus 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

Prune in Dormant Season: Summer or Fall Flowering

- ✓ Shrubs
  - *Hypericum kalmianum*: Kalm St. Johnswort
  - *Myrica pennsylvanica*: northern bayberry (foliage)
  - *Lespedeza bicolor*: shrub bushclover
  - *Perovskia atriplicifolia*: Russian-sage
  - *Potentilla fruticosa*: potentilla
  - *Pyracantha coccinea*: scarlet firethorn
  - *Rhus* spp.: sumacs
  - *Rosa* spp.: shrub roses
  - *Sambucus canadensis*: American elderberry
  - *Sambucus nigra*: European elderberry
  - *Sorbaria sorbifolia*: Ural falsespirea
  - *Spiraea japonica*: Japanese spirea
  - *Stephanandra incisa* 'Crispa': cutleaf stephanandra
  - *Tamarix chinensis*: tamarisk
  - *Vitex agnus-castus*: chastetree, vitex
  - *Yucca filamentosa*: Adam's needle yucca

Timing of Pruning: Spring

- ✓ Quicker wound closure as bark is slipping
- ✓ Can do on summer flowering plants if done in <u>early</u> 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*: fringetree
  - *Cornus mas*: Corneliancherry dogwood
  - *Cotoneaster* spp.: cotoneaster
  - *Daphne* x *burkwoodii*: daphne
  - *Deutzia* spp.: deutzia
  - *Forsythia* spp.: forsythia
  - *Fothergilla* spp.: fothergillas
  - *Hamamelis vernalis*: vernal witchhazel
  - *Ilex verticillata*: winterberry
  - *Kerria japonica*: Japanese kerria

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
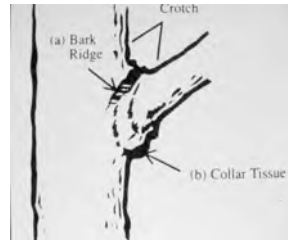
Timing of Pruning: Late Summer to Early Fall

✓**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

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 <u>after</u> flush of growth (yews)

✓ Prune after new growth is hardened (lignified)

Yew before and after heading back, mask cuts with remaining foliage

Pruning Needle-leaved Evergreens: Junipers and falsecypress

✓ Shrubs without latent buds

✓ Heading back cuts to lateral branch, hide cuts

✓ <u>Never rejuvenate or shear</u> 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