

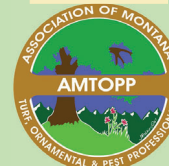
2022 Gold Country Master Gardener
Symposium
April 2, 2022



Right Tree/Right Place Siting and
Selecting the Proper Tree for Your
Needs in the Helena Area



by
Patrick Plantenberg
Townsend Tree Board



Tree Selection

- Species, Hardiness, Diversity, Mature Size, etc.)
- Common Tips on Selecting Trees
- Initial Pruning Techniques will be Demonstrated
- Plant Information from Glacier Nursery catalog available on-line at:
<https://glaciernursery.com/wp-content/uploads/Priceless-Catalog-2022.pdf>
- And the MSU Tree and Shrub Selection Guide

Landscaping Software

Top 6 Free Landscape Design Software Tools from trees.com

<https://www.trees.com/gardening-and-landscaping/free-landscape-design-software>

Plan-A-Garden from Better Homes & Garden

<https://www.bhg.com/gardening/design/nature-lovers/welcome-to-plan-a-garden/>



<https://www.trees.com/gardening-and-landscaping/free-landscape-design-software>

<https://www.bhg.com/gardening/design/nature-lovers/welcome-to-plan-a-garden/>



Landscape Design

Old Fashioned Way

- Paper method
- Draw home/yard on paper
- Cut and paste **mature** tree, shrub, and plant sizes on plan

Photo from: <https://www.smartdraw.com/>

- Paper method
- Draw home/yard on paper
- Cut and paste **mature** tree, shrub, and plant sizes on plan

Landscape Design

This 4-6' wide foundation bed installed by a landscape pro is not wide enough

- 'Wichita Blue' Juniper 10-15' tall; 8-10' wide. The tree will require major pruning over its life*
- Tatarian maple, multistem,*
- 15-25' tall; 13-15' wide: height selection is fine, stems already growing siding; pruning can keep it in place over time.*



- 15-25' tall; 13-15' wide: height selection is fine, stems already against siding; pruning can keep it in place over time.

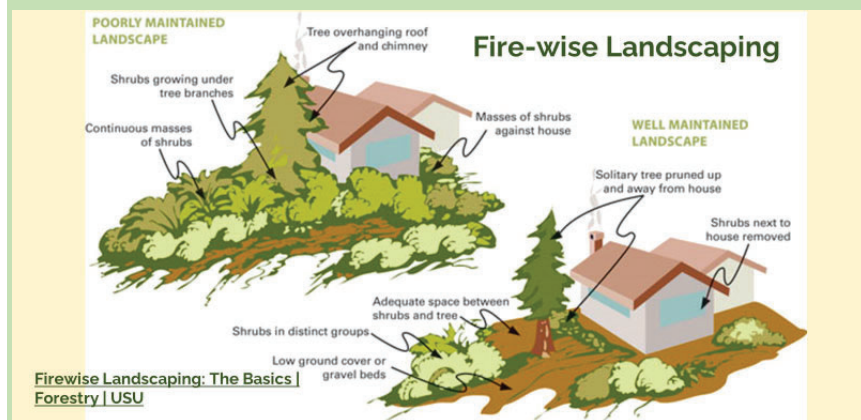


Landscape Design

People do not keep trees and shrubs pruned-so they outgrow beds-like these Pfitzer junipers



Landscape Design



Landscape Design

If beds are not wide enough, hard water from sprinklers can damage siding and fencing.



Right Tree Right Place Principles

Benefits of trees

-Shade, beauty, windbreak, privacy, cleaner air, less noise, less glare, and higher property values.

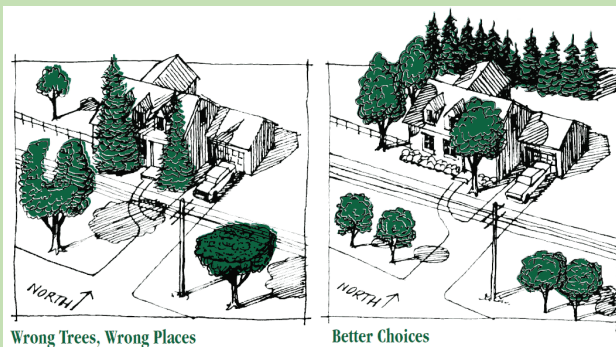
-Key to benefits: select Right Tree and plant it in the Right Place.

*-Ensures a lifetime of satisfaction and keeps **maintenance costs** low.*

<https://www.arborday.org/trees/bulletins/coordinators/resources/pdfs/004.pdf>

Right Tree Right Place Principles

<https://www.arborday.org/trees/bulletins/coordinators/resources/pdfs/004.pdf>



Wrong Trees, Wrong Places

Better Choices

Right Tree Right Place Principles

*- Planting large trees under **utility lines** often means **disfigured trees**.*

American elm should be 60' tall

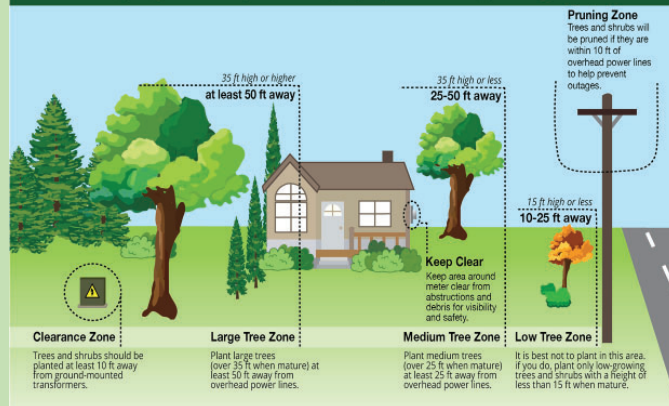


Right Tree Right Place Principles



RIGHT TREE, RIGHT PLACE!

Before planting new trees to improve the look of your yard, you will need to keep a few things in mind.



Right Tree Right Place Principles

- Large evergreens close to the house on the south, **block warming winter sunlight.**



These Juniper and/or Arborvitae plants got too large for foundation beds on south side of home

Right Tree Right Place Principles

Which Tree to Plant?

- A tree's requirements to thrive
- Form or shape
- Size at maturity
- Role or function in your landscape
- Personal Choice**

Right Tree Right Place Principles

Environmental Factors

- Nurseries have adapted trees
- Other site factors "**buyer beware.**"
- Research before you buy
- Look around your neighborhood** to see what is growing well.

Right Tree Right Place Principles

Environmental Factors to Consider

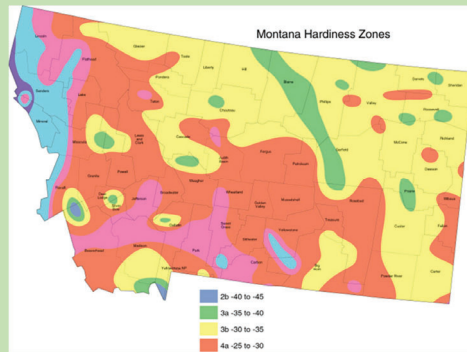
- Native** species are adapted
- Some non-native species and cultivars may do well and **add beauty, size, pest resistance, or diversity** that natives may not provide.

Right Tree Right Place Principles

Environmental Factors to Consider

MINIMUM TEMPERATURE

- Elevation and exposure (direction of the slope) have effects.
- North slopes, wind, and higher elevations can make a site **one or two** **hardiness zones lower!**



Right Tree Right Place Principles

Environmental Factors to Consider

MOISTURE

- What is species tolerance for wet or dry conditions?
- Does site **flood**?
- Is site **dry and windy**?
- Irrigation can modify a dry site but know the optimal **soil moisture requirement** for your species.



Right Tree Right Place Principles

Environmental Factors to Consider

WIND

- Is site windy?
- Know prevailing wind direction
- 90% of failures in Townsend are from **northwest winds** during storms in summer and winter
- 80% of failures are shallow rooted **Colorado blue spruce**



Right Tree Right Place Principles

Co-dominant trees

- Don't buy them at nursery
- Prune regularly to remove potential new co-dominant trunks



When co-dominant stems develop, bark may become "included" in the crotch. It is best to prune one of the stems while the tree is young.

Right Tree Right Place Principles

Environmental Factors to Consider

MOISTURE

- Evergreens** transpire water from their needles all winter.
- Water well in fall before ground freezes.
- Other trees** Do not overwater. Trees can drown or develop root rot if soil is too wet.
- With clay soils, check soil moisture during dry summer weather and water every **seven to 10 days** or more often if necessary.
- Sandy soils need more frequent watering, but every other day is probably too much.

Right Tree Right Place Principles

Environmental Factors to Consider

LIGHT

- Shade intolerant species, like birch and most pines, require **full sunlight**.
- Shade tolerant species, like most maples, hemlocks, and yews, grow well in **shade**.
- Others, like oaks, are somewhere in between.
- Plant your tree matched to its need for light

Right Tree Right Place Principles

Environmental Factors to Consider

LIGHT

- Mountain ash trees (*Sorbus spp.*) have thin bark susceptible to sun scald from low winter sun reflecting off snow. This is one of last Mountain ash trees living in Townsend in full sunlight. Plant mountain ash on north and east side of homes.



Right Tree Right Place Principles

Environmental Factors to Consider

PESTS

-Plant species that resist or tolerate pests & diseases.
-Some cultivars resist pests and disease.
-Don't plant tree on a site unlike its natural environment.
-For example, birch and aspen trees grow in moist environments. Planting them in an arid site without adequate water subjects them to **stress** and makes them vulnerable to boring insects

Right Tree Right Place Principles

Environmental Factors to Consider

SOIL

-Soil factors: Depth,
-Texture (sand, clay, etc.)
-Moisture.
-Rock content
-Acidity and alkalinity (pH)
-Soil disturbance (new parent material?)
-Compaction

Right Tree Right Place Principles

Environmental Factors to Consider

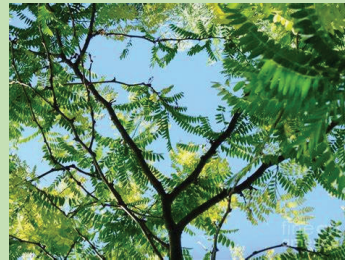
AIR POLLUTION

- Some species tolerate **air pollution** (smoke, dust, smog), some don't
- Chemicals** in the air
- Salt spray and runoff**

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

- Shade-maximize location
- Aesthetics-trees accent, frame, provide background, add visual appeal, and create space effects.
- Use **form, size, color, or texture** to create accent.



Honeylocust leaves

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

AESTHETICS: ACCENTS

1) **FORM OR SHAPE:** Horizontal lines may dominate in a level or city landscape. Use tree accent forms that contrast, such as **pyramidal, columnar, or upright oval tree shapes.**

Weeping forms accent since they are uncommon to the landscape.



Weeping crabapple and linden with classic pyramidal form

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

AESTHETICS: ACCENTS

- 2) **SIZE:** *Large size* trees will tend to accent.
- 3) **COLOR:** seasonal: *spring* flowers, *fall* foliage, or interesting *winter* bark.
- Summer* foliage color has longer duration



Royal Frost Birch

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

AESTHETICS :ACCENTS

- 4) **TEXTURE:** *Foliage* texture can be fine, medium, or coarse. For accent, a tree's texture should be an abrupt change from textures that predominate in the landscape.



*Ohio Buckeye
large leaves*



*Ponderosa pine
coarse needles*

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

AESTHETICS: ACCENTS

- 4) **TEXTURE:** *Bark* texture or *picturesque branching* structure also complement an accent plant



Weeping crab and weeping birch have picturesque branching habits

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

WINDBREAKS AND SCREENS

-Low-branching conifers screen **unsightly areas** and provide privacy.



*Rocky Mountain Juniper hedge in
Townsend to screen Highway 12 from home*

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

WINDBREAKS AND SCREENS

-Noise and dust are reduced by tall, densely planted trees with fleshy, broad leaves. With conifers, noise and dust reduction are extended through year.

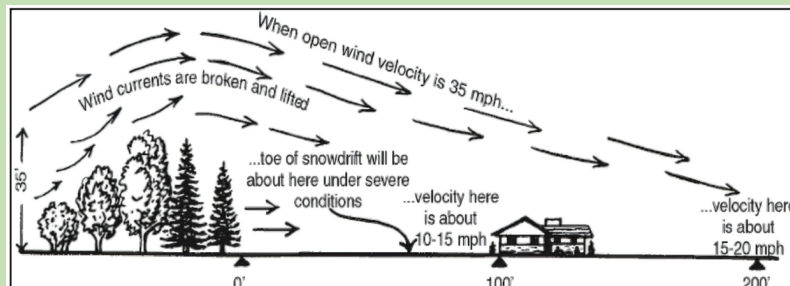
-**Windbreaks** most effective through a dense, step-like arrangement of both conifers and deciduous trees.

-For south and east sides of house, deciduous trees work because they allow incoming solar radiation in winter

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

WINDBREAKS AND SCREENS



A dense windbreak provides good wind protection and snow drift control. Adapted from Montana State University Extension Bulletin 366.

Right Tree Right Place Principles

Tree Factors to Consider/Its Purpose

BOUNDARIES

- Trees help **define** your property.
- Small, narrow-crowned species will do the job while not invading your neighbor's space.
- Plant far enough on your property to avoid the trunk **and majority of crown** touching the actual property line when mature.



Right Tree Right Place Principles

SIZE AND LOCATION

- Available space is most often overlooked or misunderstood when deciding what tree to plant.
- Before planting, know what the mature tree will look like
- Consider its height, crown spread, and root space

Right Tree Right Place Principles

SIZE AND LOCATION



Colorado blue spruce between 2 driveways. Max size 60' tall and 30' wide. Should have planted Columnar blue spruce. Max size 35' tall and 8' wide.

Right Tree Right Place Principles

SIZE AND LOCATION

Colorado blue spruce right of sidewalk. Max size 60' tall and 30' wide. Already being pruned to access sidewalk. Should be removed sooner than later to save money or pruned 8' high!



Right Tree Right Place Principles

SIZE AND LOCATION-Tree Ordinance

- No tree branch should hang lower than **14 feet** over roadway
- No tree branch should hang lower than **8 feet** over sidewalk
- All trees, bushes, shrubs, and other types of foliage shall not obstruct the visual sight of street signs or the illumination of streetlights
- trees **35' from intersection**



Right Tree Right Place Principles

SIZE AND LOCATION

<i>Spacing Guide</i>	<i>Small tree < 30'</i>	<i>Medium tree 30-70'</i>	<i>Large tree > 70'</i>
<i>Spacing for group plantings</i>	<i>6-15'</i>	<i>30-40'</i>	<i>40-50'</i>
<i>Minimum spacing from wall (one-story building)</i>	<i>8-10'</i>	<i>15'</i>	<i>20'</i>
<i>Minimum spacing from corner (one story building)</i>	<i>4-8'</i>	<i>12'</i>	<i>15'</i>

Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

Some problems shown I the next few slides can be dealt with by subsequent pruning. However, it is far easier, less expensive, and better for tree health to select and plant your tree to meet a desired objective while at the same time preventing it from:

1) Lifting walks



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

2) Entering or moving drainage pipes or other utilities.

-Mature Green ash tree had to be removed because it was planted to close to water shut off valve to home.

-Trees should be planted 5-10' from water valves to prevent this problem.



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

2) Entering or moving drainage pipes or other utilities.

-Mature Green ash tree had to be removed because it was planted too close to fire hydrant.

-Trees should be planted out of visibility triangle at intersections to avoid this problem (usually 35' from intersection).



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

3) *Installing or modifying sprinkler systems.*

-Most new sprinkler systems are using poly pipe that is flexible and not the old-fashioned white PVC pipe.

-Ensure irrigation contractor maximizes distance from trees during installation.



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

4) *Tangling with wires or eaves.*



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

4) *Tangling with wires or eaves.*

-Here is an arborvitae (Thuja spp.) up in eaves at a Townsend home.

-Homeowner was told the trees would only get 8' tall!

-Do your research-check labels!



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

5) *Shading gardens.*
-Here is a little garden in Townsend shaded already by a Russian olive tree.
The landowner planted his Arbor Day spruce seedlings there!



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

6) *Ruining the shape of nearby trees*
-Here is an example of a large, mature boxelder (right) forcing a newly planted replacement boxelder to lean away from its shade.
-This effect can be minimized temporarily by pruning back a major portion of the mature tree.



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

7) *Blocking windows or scenic views.*
-Block solar radiation to home in winter



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

8) *Interfering with outdoor lighting.*

-I have pruned this Colorado blue spruce away from this streetlight twice already in the last 10 years. It will be an ongoing maintenance cost!



Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

9) *Covering chimneys;*

10) *Blocking solar collectors*



*Thornless cockspur hawthorn (*Crataegus crus-galli* var. *inermis*)*

Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

Even though we planted correct trees for location owner of facility has not pruned the trees since planting



*Thornless cockspur hawthorn (*Crataegus crus-galli* var. *inermis*)*

Right Tree Right Place Principles

SIZE AND LOCATION PROBLEMS

11) *Encroaching on neighbors*

-Two more spruces
causing problems

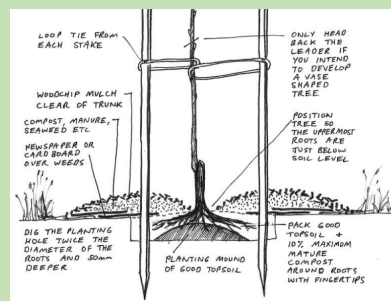


Some General Guidelines for New Construction

- *Minimize Disturbance*
- **Bond Contractor** for Additional Disturbance
- *Seed Disturbance Immediately*

Some General Guidelines for Planting Bareroot/Container/and B&B Trees and Shrubs

- *Plant in Native Soil*
- *Better to Shallow than too Deep*
- *If Possible, Protect from Deer when Young*
- *Eliminate Grass Competition*
- *Establish Central Leader for Trees When Planting*



Some General Guidelines for Bareroot Trees and Shrubs

- *Cheapest, but Hard to Find*
- *Better Root Systems-can Prune Easily When Planting*
- *Faster Growing than B&B*
- *Don't let them dry out*
- *Pot/Bury in Bark or Stump Grindings until Planting*
- *Bare Root Again when Planting*



Some General Guidelines for Container Trees and Shrubs

- *More Expensive*
- *Better Root Systems if not Rootbound*
- *Faster Growing than B&B*
- *Bare Root if Possible, when Planting*
- *"It is imperative customers planting container trees remove the outer one inch of the root plug sides and bottom prior to planting. Cutting the root plug into a cube shape with a 12" pruning blade seems the fastest and most complete method (a reciprocating saw does an excellent job). This reduces the opportunity for circling roots.." (Glacier Nursery Catalog)*



Some General Guidelines for Container Trees and Shrubs

- *Can Remove up to 30% of the Roots to get Roots to Spread out if Rootbound*
- *Check out YouTube video at:*
<https://www.arborday.org/trees/planting/containerized.cfm>



Some General Guidelines for Planting B&B Trees and Shrubs

- *Place the Tree in the Hole as Shown in the Video Below and Remove the Basket.*

- *Check out the YouTube Video at:*

<https://www.arborday.org/trees/planting/balled-burlapped.cfm>

- *After tree is in hole: “..remove the twine, burlap, and the top two horizontal rings of the wire basket using wire cutters” (Glacier Nursery Catalog)*

Cost and Time Saving Guidelines for Trees and Shrubs

- *1” caliper bareroot trees will catch up with a 2.5” caliper B&B tree in 3 years! –**Better root systems from the start** (same for properly pruned container trees)*

- *You can buy 3-5 1” container trees for the cost of 1 2.5” B&B and they are easier to plant!*

Cost Saving Guidelines for Trees and Shrubs



\$5 1 gal. Container Black Hills Spruce planted same year as \$80 B&B Colorado Blue Spruce

Cost and Time Saving Guidelines for Trees and Shrubs

-Townsend Lesson Learned: 1-gallon container grown Black Hills Spruce trees are almost as large a 5' B&B Colorado Blue Spruce planted the same year!

*-Moral: Money spent on **better root systems** pays dividends over time.*

Cost and Time Saving Guidelines for Trees and Shrubs

-Townsend Lesson Learned: 1-gallon container grown Black Hills Spruce trees are almost as large a 5' B&B Colorado Blue Spruce planted the same year!

*-Moral: Money spent on **better root systems** pays dividends over time.*

Questions?

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The Plant Native Initiative-

What is this fuss about planting native species?

Benefits of Planting Native Species

Native Species Reduce :

1) *water, chemical, and fertilizer use*

2) *maintenance time and costs (?)*

3) *loss of birds, butterflies, and other organisms that have co-evolved with native species*

4) *Preserve biodiversity*

5) *Most are not invasive*

Watch Doug Tallamy: <https://www.youtube.com/watch?v=ZHURaRv78QY>

Some General Information about MT Native Trees Species

Green Ash

Fraxinus pennsylvanica

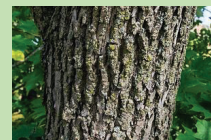
- *Most Common Urban Tree East of Continental Divide*

- *Female Trees Produce Seeds*

- *Seedlings are Common Weed*

- *Don't Plant because of Emerald Ash Borer*

- *50-60' tall; 30-35'wide; Zone 3-4*



Quaking Aspen

Populus tremuloides

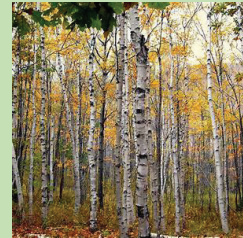
- Marginal in Urban Landscapes; Best in Foothills
- Find Source East of Divide
- Spreads by Underground Shoots
- Transplants Easily; Shallow Rooted
- Short-lived; Phase in Replacements
- 30-40' tall; 15-20' wide; Zone 1
- Alternative: Paper Birch



Paper Birch

Betula papyrifera

- Doesn't Spread by Underground Shoots
- Plant in Groves to Mimic Aspen Stands
- 30-40' tall; 20-30' wide;
- Several Zone 2-3 Cultivars Available
- Mix with purple leaved Royal Frost Birch



Box Elder

Acer negundo (one of 2 native maples!)

- Dioecious –Male and Female Plants
- Females have Samaras and

Box Elder Bugs

- Weedy seedlings;
 - 50-60' tall; 25-35' wide; Zone 2
 - Recommend Zone 4 Male
- Cultivar 'Sensation' Boxelder
- Slower, more controlled growth



American Elm

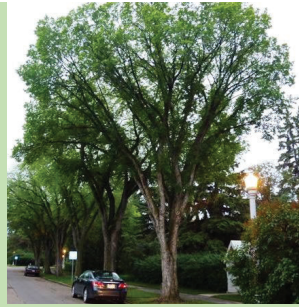
Ulmus americana

- Large Shade Tree
- Select Central Leader at Nursery
- Dutch Elm Disease (DED)
- 60-70' tall; 30-40' wide; Zone 3
- Recommend DED Resistant

Zone 3-Cultivar:

'Lewis & Clark'

Prairie Expedition Elm



Bur Oak (our only native oak)

Quercus macrocarpa

- Large Shade Tree; Slow Growing
- Native to Southeastern MT
- Subject to galls; won't hurt tree
- 40-60' tall; 25-30' wide; Zone 3



Black Cottonwood

Populus balsamifera

- Large Shade Tree with fast growth
- not for Residential Yards
- Dioecious; Females Produce Cotton
- Moisture tolerant
- Requires Ample Water
- Subject to root sprouting
- 80-90' tall; 35-40' wide;
- Zone 3
- Don't plant exotic white Cottonwood (*Populus alba*)



© Craig Althen



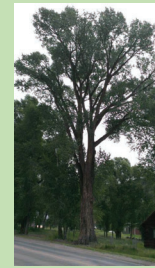
© MTNHP - Sue Crispin



Narrow-leaf Cottonwood

Populus angustifolia

- Large Shade Trees with Fast Growth-not for Residential Areas
- Tolerates high-elevations
- Subject to root sprouting
- Dioecious
- Females Produce Cotton
- 50-60' tall; 40-50' wide; Zone 3



Plains Cottonwood

Populus deltoides

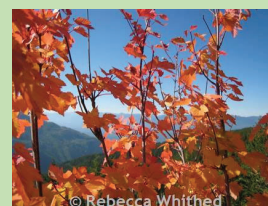
- Large Shade Trees with Fast Growth not for Residential Areas
- Less Likely to Spread by Underground Suckers
- Dioecious
- Females Produce Cotton
- 50-60' tall; 40-50' wide; Zone 3
- 70-80' tall 'Siouxland' cultivar is seedless male



Rocky Mountain Maple

Acer glabrum (one of 2 native maples)

- Small tree or large shrub with multiple stems
- Best adapted to western Montana
- Plant on north or east side of home
- Does best in moist soils
- Yellow to red fall color
- 18-20' tall; 18-20' wide; Zone 3



Nannyberry

Viburnum lentago

-Native tree form version of the popular large growing *Viburnum* shrub.

-White flower and glossy green foliage

-Maroon fall color and dark blue fruit

-Nice accent plant for a small area

-Suited for planting under utilities

-12-15' tall; 10' wide; Zone 2



Ponderosa Pine

Pinus ponderosa Montana State Tree

- 2-3 Needle pine

- Too Large for Most Residential Yards

- Select Eastern Ecotype

- Fairly Drought Tolerant

- Well Drained Soils

- 60-70' tall; 40-50' wide;

- Zone 3



Lodgepole Pine

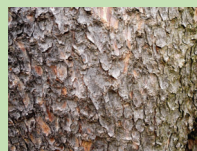
Pinus contorta

- 2 Needle Native Mountain Pine with Narrow Crown

- Not Adapted to Helena Urban Settings;

- 70-80' tall; 15-20' wide;

- Zone 4



Limber Pine

Pinus flexilis

- 5 Needle Native Pine
- Select eastern ecotype
- Drought and Wind Tolerant
- In Windy Areas, Tree is More of a Large Shrub/Small Tree
- Does Well in Rocky Soils
- 50-60' tall; 35' wide; Zone 4
- 'Vanderwolf' cultivar not winter hardy in Townsend



Engelmann Spruce

Picea engelmannii

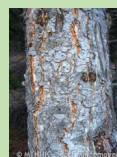
- Spire-shaped and Compact
- Moist to wet forest stream bottom species
- Not adapted to Helena Urban Setting -120' tall; 35' wide; Zone 2



Douglas Fir

Pseudotsuga menziesii

- Too large for Residential Properties
- Dry to Mesic Forest Species
- Does Best with Abundant Atmospheric Moisture
- Marginal Species to Helena Urban Setting
- 80-100' tall; 20-30' wide;
- Zone 4



Rocky Mountain Juniper

Juniperus scopulorum

-Good Drought Tolerance

-Excellent for Screen or Specimen

Plant

-Dioecious; Females have berries

- 10-15' tall; 8-10' wide (varies with cultivar); Zone 3

-Cultivars 'Wichita Blue'

- 'Medora' 10-12' high; 4' wide



Some General Information about Introduced Trees Species

Maple Species- small trees

Acer ginnala - Amur maple doesn't like our alkaline soils; chlorosis

- 15-20' tall; 8-10' wide; Zone 2

'Flame cultivar'-good fall color



Acer tataricum- Tatarian Maple

-Better adapted; Seedlings problematic; some chlorosis; wild hairs;
Yellow orange fall color; - 15-25' tall; 13-15' wide

-treat for chlorosis each year



Other Introduced Maples

Acer platanoides – Norway Maple

- Most Common Street Tree West
of the Divide

- Green leaves; Yellow fall color

- Seeds germinate readily

-40-60' tall; 30-40' wide; Zone 3-4

-Cultivars 'Helena' and 'Emerald Lustre'; "Deborah"



Other Introduced Maples

Acer saccharum – Sugar Maple

- Green leaves; Yellow to orange fall color

- Dense shade like Norway Maple

- Chlorosis like other maples

-60-70' tall; 40-50' wide; Zone 3

-Cultivars 'Green Mountain' doing well in Townsend



Other Introduced Maples

Acer x freemanii – "Sienna Glen" Maple

- Hardier Hybrid between Silver and Red Maple

- Green leaves; Red-orange fall color

- Better Branch Structure Than 'Autumn Blaze'

- More drought tolerant

-50' tall; 40' wide; Zone 3



Ohio Buckeye

Aesculus glabra

-Rounded compact habit

-Yellow-Reddish Fall color

-Coarse Branches can Take Wind and Snow Loads

-Nuts are Poisonous

-25-30'tall; 20-30' wide; Zone 3

-Cultivar 'Early Glow'

-Having Trouble getting Horsechestnut to Grow in Townsend