

Landscape Management Plan

Plant selection

Plant health and condition of the rootball:

- Make sure that all plants are free of pests, diseases and injuries¹.



weevil damage on Skimmia



- Check that woody plants have no structural defects. Branches must NOT have been pruned back (except properly removed at the branch collar).



evidence of pruning injury



poorly pruned, topped tree

¹ For organic remedies, see <http://www.ghorganics.com/page15.html> Accessed November 11, 2009.



unacceptable co-dominant stems

- Check that rootballs are of sufficient size (meet BCLNA standards).² Make sure that each species of tree and shrub to be planted has a rootball, root spread or container size corresponding to the guidelines set out in BCLNA standards sections 3.0 through 6.4.1.
- Check that plants have no circling woody roots. (See http://www.wimbishtreefarm.com/rootpruning_files/image001.gif)



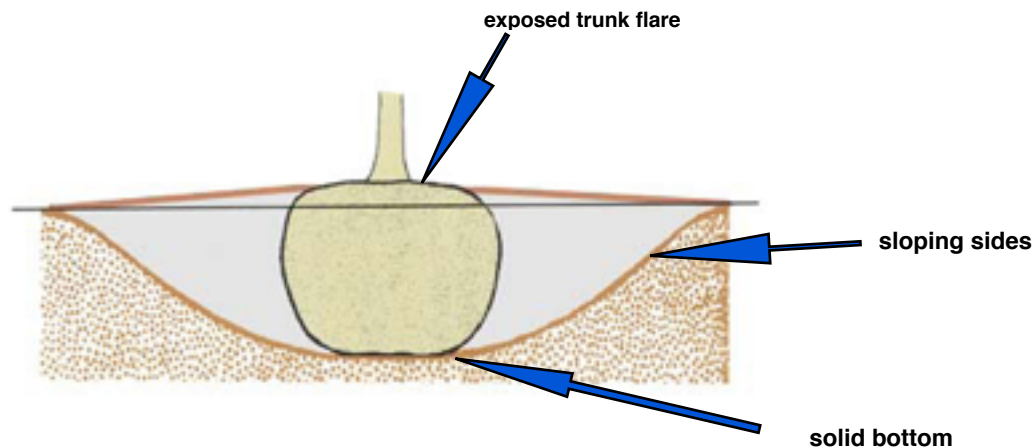
- Check that balled and burlapped (b & b) plants have been regularly root pruned in the nursery.
- Check that bare root plants have a well developed root system, free of injured roots.
- Determine whether plants have been inoculated with the appropriate mycorrhizal fungi in the nursery.³ If they have not, do this as part of the planting process.

² See http://www.canadanursery.com/Storage/10/605_Canadian_Standards_For_Nursery_Stock_-_8th_Edition_2006.pdf Accessed October 28, 2009.

³ See <http://cropsoil.psu.edu/sylvia/mycorrhiza.htm> For research on inoculants, see <http://www.seedquest.com/keyword/biologicalsandinoculants/resources.htm> Accessed October 29, 2009.

Plant installation⁴

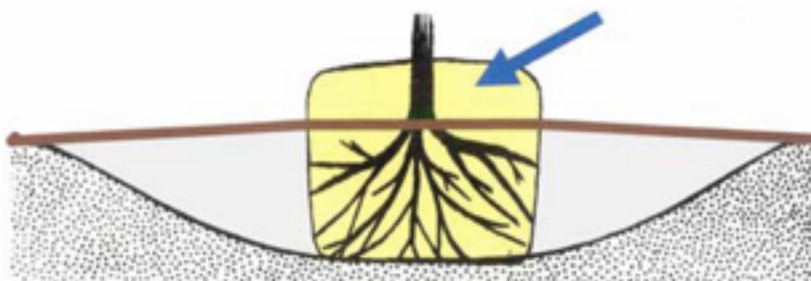
☐ Planting B&B trees & shrubs:



Hole should be 3-5 times the diameter of the rootball.

Make sure that at least two structural roots are within the top 1-3 inches of the root ball, measured 3-4 inches from the trunk.

On species prone to trunk circling roots (Crabapples, Poplar, Red Maple and other species with aggressive root systems), the top structural root should be within the top one inch of the rootball.⁵



If the tree is planted too deep in the root ball, excess soil should be removed from the top in the backfill step of the planting process. Adjust the depth of the planting hole to compensate

⁴ See Gaia College. **Landscape Management Plans**. 2007 http://www.gaiacollege.ca/moodle/file.php/47/Landscape_Management_Plans/Landscape_Management_Plans_Handout_Planting.pdf Accessed October 28, 2009.

⁵ Colorado State Master Gardener Program <http://cmg.colostate.edu> Accessed November 11, 2009.

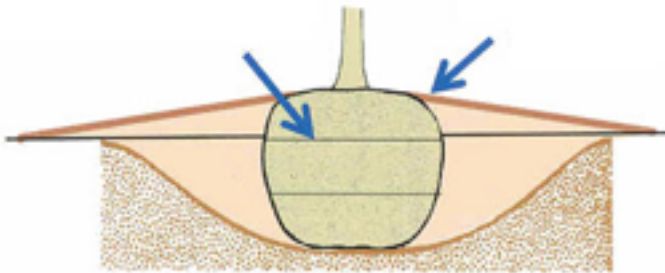
B&B planting instructions (cont.)

For plant stability, ensure that the root ball sits on undisturbed soil. If the hole is dug too deep, back fill and firmly pack the soil to the correct depth. The planting hole should be shallow and wide: primary growth of roots is out, not down.

Why the planting hole is saucer-shaped and at least 3 times the size of the rootball:

This allows the root system to grow rapidly to 400% of the root ball size before being slowed by the lower oxygen levels of the site soil. This is enough to reduce *post-planting stress* under normal conditions. For example, a two-inch diameter tree with a 24-inch (two-foot) wide root ball needs a 72-inch (6-foot) wide, saucer-shaped planting hole. To promote root growth the planting hole is wide, shallow and saucer shaped!

B&B plants and wet soils



On wet soils, ensure that 1/3 of the root ball is above grade. Cover root ball "knees" with soil, gradually tapering down to grade. Do not use mulch to cover knees as roots will readily grow in moist mulch, but will be killed when the mulch dries out.

Planting B&B plants on a slope



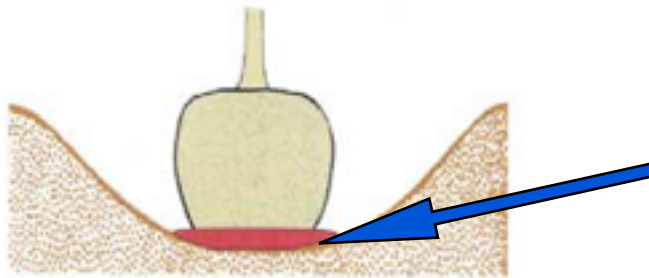
When planting on a slope, adjust the grade to plant "out-of-the-hill" in order to promote healthy root growth.

☐ Instructions for container-grown trees and large shrubs:

- ☑ Lay the tree/shrub on its side in or near the planting hole.
- ☑ Wiggle off or cut off the container
- ☑ Score fibrous root balls with a sharp knife, saw or pruners. Cut circling roots.



- ☑ Tilt tree into place. Remember that the inside curve of any tree's dogleg goes to the north.
- ☑ Check depth of root ball in planting hole. If needed, remove tree/shrub and correct depth of planting hole. Firm any soil return to the bottom of the hole.
- ☑ Align vertically.
- ☑ For stability, firm a shallow ring of soil around the bottom of the root ball.



Stabilize the tree by firming a small ring of backfill soil around the base of the root ball.

- ☑ If some of the soil falls off (often on the bottom), adjust the depth of the planting hole. Backfill and pack the bottom of the planting hole to the correct depth.
- ☑ Fabric grow bags must be removed from the sides. Cut them away after setting the tree in place.
- ☑ Remove any paper/pulp type containers
- ☑ If the container is easy to cut, it may help to keep the root ball intact by first cutting off the bottom of the container, carefully setting the tree in place and tilting to align vertically, then cutting a slit down the side to remove the container.
- ☑ In handling large trees (3-inch caliper and greater), set the tree in place before removing the container.

☐ Special instructions for planting bare root plants.

- ☑ Unpack roots to measure root spread. Cover or repack to protect roots while the hole is dug. Soak the roots in a bucket of water for a couple of hours. Do not leave them in the water for more than a half day.
- ☑ Dig a shallow saucer shaped planting hole, three times the diameter of the root spread. Depth of the planting hole should accommodate the planting depth standards mentioned above
- ☑ Top of back fill will be one inch above grade.
- ☑ Ensure that at least two structural roots are within the top 3-7 cm of the soil surface.

- On species prone to trunk circling roots (such as Crabapples, Poplar, and Red Maple), make sure the top structural root is within the top one inch of the root ball soil surface.
- Mound soil in the bottom of the hole so that the peak reaches just below ground level.
- Set the tree or shrub on top of the mound so the roots cascade down over the sides. Spread them gently with your hands if you need to, and add or remove soil so that top of the root system is just at ground level.
- Fill the hole about halfway with soil and tamp it lightly with your foot to remove large air pockets.
- Make sure the tree or shrub is standing straight up, then water slowly to saturate the soil and to remove any remaining air pockets.
- Finish filling the hole with soil. Use any extra to build a temporary berm above the perimeter of the roots and water again.
- Most bare root trees will need staking.
- Keep the soil moist for the first year after planting. Mulch to retain moisture, but keep at least six inches bare around the trunk. Check frequently; if you see yellow leaves or the soil feels dry, water immediately.

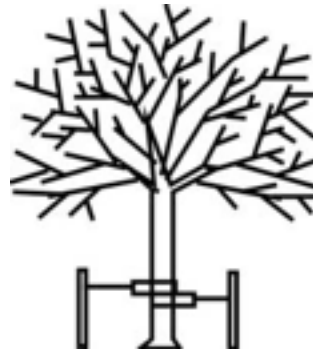
Soil amendments to be added to the planting hole:

- Amend the backfill with well-aged compost. Amount should only be 5% of backfill mass. Mix the compost thoroughly with the backfill soil.⁶
- Apply the appropriate endo- or ectomycorrhizal inoculant.

Ties & stakes

Note 1. Required only for temporarily stabilizing very tall trees, bare root trees, trees with small root systems and heavy canopies or trees exposed to winds.

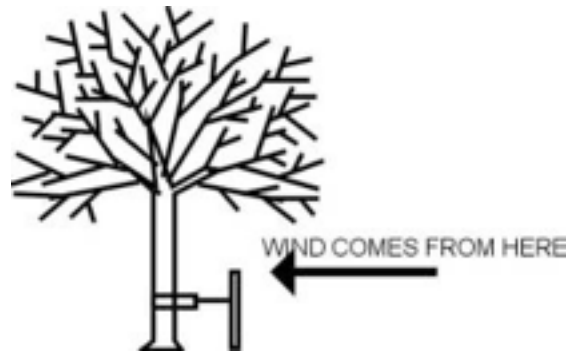
Note 2. Remove stakes when root system is established: 1 growing season or 2-3 seasons for large guyed trees



Attach stakes at sway point.

⁶ Amending the backfill to 25-50% is a common mistake! This helps containerize the roots and may also hinder root spread beyond the planting hole. It may hold excessive amounts of water, reducing soil oxygen levels. As the organic matter decomposes, the total volume of soil in the planting hole reduces, potentially causing the tree to topple over. Colorado State Master Gardener Program <http://cmg.colostate.edu> Accessed November 11, 2009.

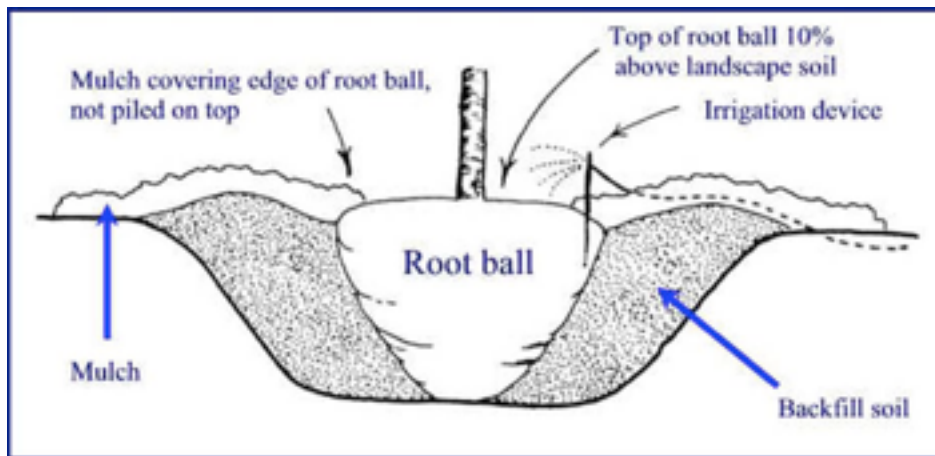
Ties & Stakes (continued)



- Place stakes upwind
- Place stakes outside rootball
- Ties must not injure or girdle. They must allow trunk movement.
- Ties should be canvas or similar soft, broad material.
- Remove stakes and ties after one, or, at most, two growing seasons.

How the new plants are to be mulched.

- On newly planted trees and shrubs, do NOT place mulch directly over the root ball.
- Don't place mulch up against the trunk/stem(s) as this may lead to decay.
- For trees, apply 3-4 inches of wood chip mulch over the backfill area and beyond. This will give better weed control and prevent additional soil compaction from foot traffic.
- To build up the soil and the life in it, add thin layers (approx. 5 cm) of organic mulch around plants throughout the year.
- To conserve water, add thicker layers (7-10 cm) of mulch.



Watering instructions for the 1st year.

- In the first growing season, keep entire root zone moist (not waterlogged).
- With more mature plants, watch for signs of stress and water accordingly, frequently during warm summer months.
- Use soaker hoses for shrubs & perennial beds.
- Water tree canopies during very hot weather.

General Plant Maintenance

Plant maintenance will be carried out under the SOUL Certified Organic Land Care Guidelines.⁷

- Newly installed plants need to be kept well watered until they are properly established.
- Trees should **not** be fertilized for the first year unless nutrient deficiencies become apparent (this should not be a problem with proper soil preparation).
- Tree circles need to be kept free of weeds and turf. Check periodically to make sure ties or trunk wrap are not damaging the tree trunk, and remove them promptly when no longer required.
- Delay major pruning such a crown raising, structural corrections, etc. for 2-3 years.
- Mulch, mulch, mulch.

Pruning⁸

All pruning should be done by an ISA Certified Arborist⁹ or a *SOUL Certified Organic Land Care Professional*.

- All previously cone- and ball-shaped pruned trees and shrubs are to be allowed to return to their natural shapes. Pruning needs should be assessed after this natural growth occurs.
- At planting time, remove any dead, damaged or diseased, crossing or rubbing branches from new trees.
- Double leaders or multiple stems should not be pruned for the first 2 or 3 years.

Soil management

Management practices for each landscape area with respect to recycling of plant litter.

- Maintain or increase soil organic matter content via the regular application of compost and mulch.
- Prevent soil erosion with the frequent addition of organic matter and appropriate ground cover on slopes of beds.
- Prevent and/or relieve soil compaction in planted areas via sufficient access/viewing pathways the addition of organic matter and ground cover plants.
- Recycle organic matter in place. (Chop/cut up a plant's spent leaves and stems and scatter them on the soil over its roots.)
- Compost and reuse organic matter on site.
- Increase the diversity of soil life via the frequent addition of compost and the appropriate ecto- or endomycorrhizal inoculant when necessary.
- Use compost and leaf mulch or grass clippings for mulch. For optimum soil health, ensure that there are 2 inches of mulch at all times.
- Apply organic, nutrient specific fertilizers and pH altering products based on soil or tissue analyses.

⁷ <http://www.organiclandcare.org/standard.html> Accessed October 28, 2009.

⁸ See **Pruning Trees** <http://hort.ifas.ufl.edu/woody/pruning.shtml> Accessed October 28, 2009.

⁹ See <http://www.isa-arbor.com/findArborist/whatisacertarb.aspx> Accessed October 28, 2009.

Plant Descriptions & Planting Instructions for Ledgestone Beds

□ Plant List

Fragrance & Insect Garden

Pa	Perovskia atriplicifolia	(Russian Sage)
Cd	Callicarpa dichotoma	(Purple Beautyberry)
Iv	Itea virginica	(Virginia Sweet Spire)
A	Agastache	(Anise Hyssop)
Cl	Crocosmia 'Lucifer'	
Ep	Echinacea purpurea 'Ruby Giant'	(Giant Purple Cornflower)

Fern & Rock Garden

Af	Athyrium felix-femina	(Deer Fern)
An	Athyrium niponicum var. pictum	(Japanese Painted Fern)
Ap	Adiantum pedatum	(Maidenhair Fern)

Woodland Garden

Bm	Brunnera macrophylla 'Jack Frost'	'Jack Frost' Siberian bugloss
Eg	Epimedium grandiflorum 'Lilafee'	(Barrenwort, Bishop's Cap)
Ep	Epimedium x perralchicum	(Yellow Barrenwort)
Rs	Cornus sanguiniem	(Bloodtwig dogwood)
Ct	Choisya ternata	(Mexican Orange)

Trees

Ag	Acer griseum	(Paperbark maple)
Aj	Acer japonicum 'Aconitifolium'	(Fernleaf fullmoon maple)



Plant Descriptions & Directions for Care

Fragrance & Insect Garden

Perovskia atriplicifolia (Russian Sage)

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Height: 36"-60"

Spread: 18"-24"

Exposure: partial shade, partial sun, full sun

Bloom time: early fall, late summer, mid summer

Soil Condition: Loamy, neutral, sandy; slightly alkaline

Moisture: dry to moist

Form: Irregular or sprawling

Special Features: Attractive, fragrant foliage; attracts butterflies; suitable for cut flowers



Choosing the plants:

Look for Russian sage at nurseries spring through fall.

Buy Russian sage in 4-inch to 1-gallon containers

Choose healthy-looking plants with signs of new growth in leaf and flower buds.

Installation Instructions:

1. Plant Russian sage in full sun in well-drained soil
2. Add a light application of organic fertilizer to the planting hole.
3. Set the plants 1 foot apart.
4. Place the plants no deeper than they were in their containers.
5. Mulch around but not on top of the plants with 3 inches of organic compost.
6. Water well until soil is completely moist.

Caring for Russian Sage

Cut down last year's growth - leaving 3 or 4 inches - in early spring using bypass pruners. Mulch around but not on top of the plants with 3 inches of organic compost in early spring. Water well until soil is completely moist; do this weekly in summers with no rainfall.

Callicarpa dichotoma (Purple Beautyberry)

Height: 48"-72"

Spread: 35"-72"

Exposure: partial shade, partial sun to full sun.

Bloom Colour: Lavender, pink; Bloom time: Early summer, Late summer, Late spring, Mid summer

Soil condition: acidic, clay, loamy. Neutral, sandy, alkaline. Well-drained.

Moisture: moist

Form: Rounded, upright or erect. Weeping

Special features: drought tolerant; berries attract birds.

Caring for Callicarpa dichotoma

Cut back to 1 ft above base in late winter each year for best berry production (flowers on new growth). Callicarpa cross pollinates, so mass plantings ensure good berry production. Berries are bitter-sweet, so birds will choose them when other more attractively sweet sources are exhausted. Blossoms attract butterflies.

**Itea virginica (Virginia Sweet Spire)**

Height: 48"-72"

Spread: 72"-120"

Exposure: partial shade partial sun to full sun.

Bloom Colour: white; Bloom time: Early summer, Late summer, Late spring, Mid summer.

Beautiful fall display of reds & oranges in leaves.

Moisture: wet

Soil condition: Acidic, clay, loamy, neutral, sandy, slightly alkaline, well-drained.

Form: rounded

Special features: Attracts birds & butterflies. Fragrant & attractive blooms. Brilliant fall colour.

Caring for Itea virginica:

Once established, the plant is drought-tolerant. Needs minimal care. Will spread in moist conditions. Prune just after the shrub blooms. Stay ahead of root suckering if you don't want the plant to spread. This very characteristic makes the plant a good choice for erosion control.

**Agastache (Anise Hyssop) 'Blue Fortune'**

Height: 24"-36"

Spread: 18"-24"

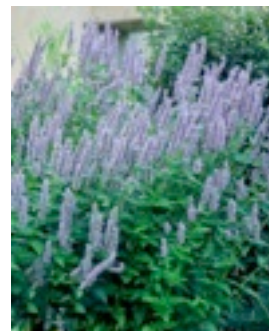
Exposure: Full sun

Bloom colour: Lavender blue; Bloom time: Summer to fall.

Soil condition: Well drained

Form: Clumping with tall flower spikes

Special features: Fragrant licorice smell.



Attracts many species of beneficial insects and hummingbirds.
Easy to care for. Drought-tolerant. Combines well with Echinacea

Caring for Agastache:

Forms clumps & doesn't need deadheading, unlike other varieties of Agastache, which behave (or misbehave) like mint.

Crocsmia masoniorum 'Rowallane Yellow'

Height: 36"-48"

Spread: 12"-24"

Exposure: Full sun to full shade.

Bloom colour: bright yellow; Bloom time: Mid to late summer

Moisture: Well-drained

Soil condition: all types of well-drained soil. Not fussy about pH.

Form: Tall arching spikes of funnel shaped blossoms.

Special features: Striking blossoms;
attracts hummingbirds & butterflies.



Caring for Crocsmia:

Plants require minimal care.

Clumps should be divided every 3 years in the spring.

Echinacea purpurea 'Ruby Giant' (Giant purple coneflower)

Height: 30"

Spread: 24"

Exposure: Full sun, partial shade

Bloom colour: Pinkish-purple flowers,
7" diameter blooms that don't droop:

bloom time: Mid to late summer.

Soil condition: Well-drained, moderately-fertile soil.

Form: Tall erect stems with gigantic flowers

Special features; Gigantic flowers attract insects.

Caring for Echinacea:

Divide in fall or spring, although they resent a lot of disturbance.

Huge flowers & cones. Needs staking.



Fern & Rock Garden

Athyrium felix-femina (Deer Fern)

Height: 24"-30"

Spread: 30"-36"

Exposure: shade to partial shade, partial sun.

Bloom colour: green

Moisture: moist to wet

Soil condition: Loamy, neutral, well-drained

Form: Irregular or sprawling



Athyrium niponicum var. pictum (Japanese Painted Fern)

Height: 18"-24"

Spread: 20"-24"

Exposure: Shade to partial shade to partial sun

Bloom colour: Silvery, variegated

Moisture: Moist to wet

Soil condition: Acidic, loamy, neutral, sandy, well-drained

Form: Irregular or sprawling; spreading or horizontal

Special Features: Attractive foliage

Caring for *Athyrium niponicum***Adiantum pedatum (Maidenhair Fern)**

Height: 12"-20"

Spread: 12"-36"

Exposure: shade to partial shade, partial sun

Bloom colour: green

Moisture: wet

Soil condition: Acidic, loamy, neutral, sandy, well-drained

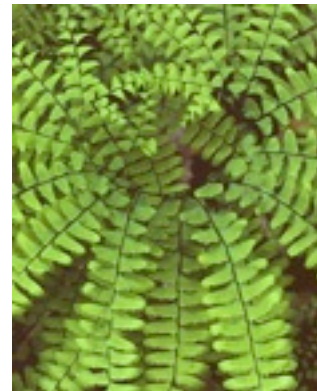
Form: Irregular or sprawling

Special features: Attractive foliage. Naturalizing.

Caring for Maidenhair ferns:

Maidenhair ferns will lose their fronds in cold weather.

Cut the dead fronds off at ground level in the spring before new growth starts. Remove any dead or ragged fronds throughout the growing season, by snipping them off at ground level.

**Woodland Contrast Garden****Brunnera macrophylla (Siberian bugloss)**

Height: 10"-18"

Spread: 12"-24"

Exposure: Shade to partial shade, partial sun

Bloom colour: Blue; Bloom time: Late, spring, mid spring.

Moisture: moist to wet

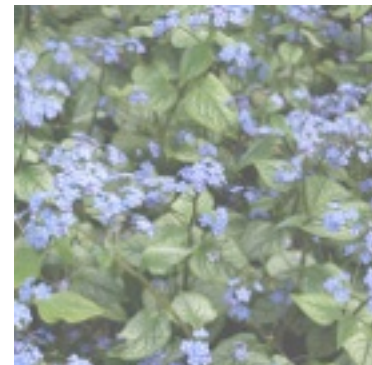
Soil condition: Adaptable, clay, loamy, neutral, well-drained

Form: Spreading or horizontal

Special features: Attractive foliage, naturalizing.

Caring for Brunnera macrophylla

Add lots of organic matter to soil. Prune plants back in the spring to improve overwintering success.

**Epimedium grandiflorum 'Lilafee' (Barrenwort, Bishop's Cap)**

Height: 5"-11"

Spread: 20"-24"

Exposure: Shade to partial shade partial sun

Bloom colour: Lilac purple; Leaves: Green-maroon;

Bloom time: April-May



Moisture: Moist

Soil condition: humus-rich; tolerate dry when established

Form: Ground cover.

Special features: Attractive flowers & foliage. Excellent as mass planting in woodland gardens.

Caring for *Epimedium grandiflorum*

Keep moist until established. Propagate by division before flowering time or after the foliage matures. In late winter cut back the dead foliage to expose the new young growth. Often recommended as a ground cover but crowding impairs flower production. Planted on 15-18" centers, it blooms abundantly.

***Epimedium x perralchicum* (Yellow barrenwort)**

Height: 15"

Spread: 24"

Exposure: Shade, partial shade

Bloom colour: Yellow; Bloom time:

Moisture: Moist

Soil condition: Rich, light, well-drained

Special features:



Caring for *Epimedium x perralchicum*

They are generally hardy and enjoy a spot in dappled shade with moist, well-drained soil and regular mulching with garden compost or leaf mould. For the best foliage, cut back old leaves in spring before new foliage appears. *E. x perralchicum* is a robust variety that makes a large clump of glossy, deep green leaves, which are bronze when young. Pendent, bright yellow flowers appear in mid- to late spring.

***Cornus sanguineum* (Bloodtwig dogwood)**

Height: 6'

Spread: 6'

Exposure: Full to partial sun

Bloom colour: White; Bloom time: Late spring

Moisture:

Soil condition: Fertile, well-drained

Form: Rounded

Special features: Striking red twig colour in winter. Tendency to sucker.

Caring for *Cornus sanguineum*

To get this spectacular winter stem effect with dogwoods, it is necessary to cut the shrubs back hard each spring (to 15 cm above ground). Mid-March is fine, but a little earlier or later will be ok depending upon the suitability of 'gardening' weather. The reason for this hard pruning is to encourage as many upright cane-like stems as possible. The new stems have the brightly coloured bark, whilst the older stems are nowhere near as spectacular. The stems will re-grow to 1m – 1.5m high each year – starting off slowly as they sprout from below the pruning cut, then growing quickly throughout June until the end of August.



Acer griseum (Paperbark maple)

Height: 25'

Spread: 15'

Exposure: Shade to full sun

Bloom colour: green

Bloom time: Early spring-Late spring.

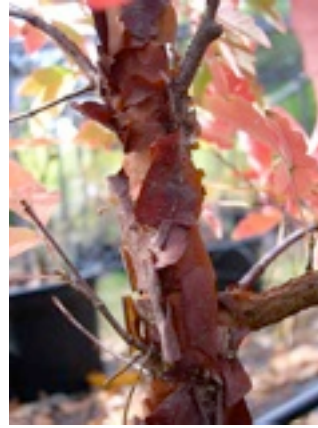
Moisture: Moist

Soil condition: Acidic, clay, loamy, neutral, sandy, alkaline, well-drained.

Form: Oval, upright or erect.

Special features: Unusual bark, outstanding autumn colour.

Adaptable, drought tolerant & pest-free. Easy care.

**Acer japonicum 'Aconitifolium' (Fernleaf fullmoon maple)**

Height: 10'-15'

Spread: 6'-10'

Exposure: Shade to partial shade partial sun

Bloom colour: red

Bloom time: Early spring, late spring, mid spring.

Leaf colour: Green

Moisture: Moist

Soil condition: Acidic, clay, loamy, neutral, sandy, slightly alkaline, well-drained

Special features: Attractive foliage.

