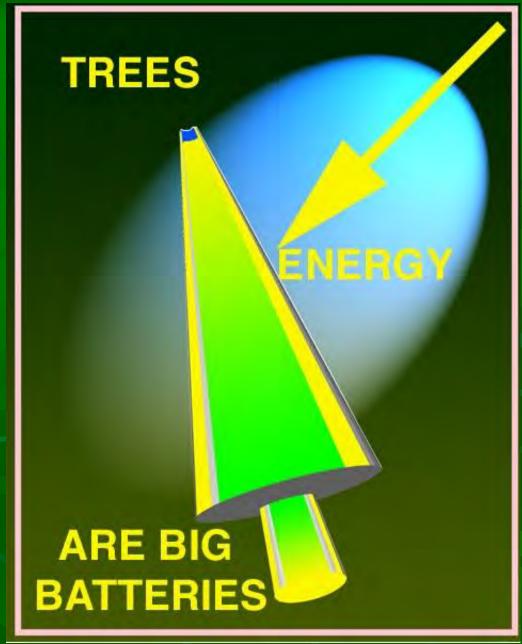
TOS TARINE



- TREES grow taller, live longer, & become more massive than any other living thing because trees are perennial woody plants.
- WOOD gives trees superior mechanical support, which is the trees' unique feature.
- ROT destroys the trees' unique feature.
- PREVENT WOUNDS THAT LEAD TO ROT; lawnmowers, cars, fire, construction, climbing spikes, improper pruning, topping, deep injection & implant holes, and the list goes on and on !!!



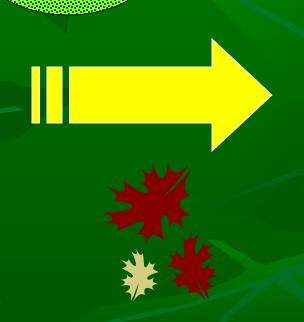
Alex Shigo

PHOTOSYNTHESIS:

Chloroplasts within plant cells use sunshine to make sugar.



Fertilizers
ARE NOT
tree food. You
DO NOT feed
a tree when
you add
fertilizers







Ideal Site Characteristics

- SPACE- above & below ground
- TEMPERATURE- hardiness
- ELEMENTS- soil structure, texture, ph
- WATER- soil freshness, moisture levels

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TREE ROOTS



- Tree Roots often grow far beyond the tree crown dripline.
- Most roots seldom grow deeper than 3 ft.
- Woody roots support the tree & store energy reserves
- Non-woody roots absorb water & essential elements from soil.
- Non-woody roots are often associated with beneficial fungi (A)
- Fertilizers provide elements that may be low or lacking in soil.
- Fertilizers can be helpful only when essential elements are lacking in soil.

The 4 P's of Plant Health Care

P

 PLAN – communicate/understand structure & function



P

PLANT- right tree in the right place

P

PROTECT- monitor for action threshold

P

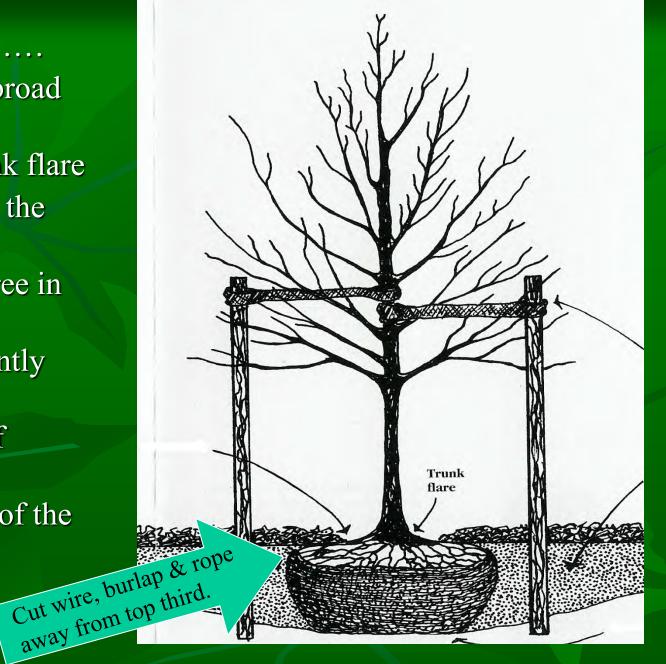
PESTS- take action when needed

Planting Methods Influence Success

Once a superior tree has been chosen for planting, proper planting will ensure it gets a good start. The following planting instructions offer direction to avoid the most common planting mistakes!

New Tree Planting.....

- 1. Dig a shallow, broad planting hole.
- 2. Identify the trunk flare
- 3. Place the tree at the proper height.
- 4. Straighten the tree in the hole.
- 5. Fill the hole, gently but firmly.
- 6. Stake the tree, if necessary.
- 7. Mulch the base of the tree.
- 8. Follow up care.



- Plant the right tree in the right place...Do NOT plant
 - Pines in alkaline soils
 - Trees in old alkaline building rubble
 - Willows in dry soils, spruce in wet soils
 - Birches in shade, dogwoods in unprotected open sites

Learn the biological requirements of your trees. Do not plant unless you plan to maintain.

- Plant Properly....DO NOT....
 - Crowd trees in small holes with compacted soil
 - Over-amend the soil with humus
 - Fertilize at planting time
- Do prune dead and dying branches and roots.

- Keep grass away.....Do Not.....
 - Water grass heavily near trees that normally grow on dry sites.
 - Wound trees with lawnmowers and other machines
 - Heavy use of herbicides, especially "weed n' feed" may harm trees.

- Brace, but not too tightly...Do NOT....
 - Tie the young trees so tightly that they do not move.
 - Leave braces on after tree is established
 - Kill bark with cords, wires, bands, etc.

- Prevent wounds.....Do Not....
 - Allow anyone to climb your tree with spikes
 - Allow heavy construction machines near your tree
 - Park cars near trees.

Long Term Care of Trees

- Tree management must be viewed as long term care not as single treatments, applied when something is wrong.
- Therefore, it is important to create a stable tree structure, minimize unfavourable environmental changes and minimize insect and disease attack.
- A few important management techniques that accomplish this are:

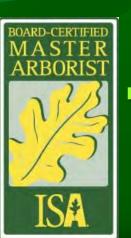
Long Term Care of trees cont'd.

- Train trees when they are young to develop a strong branch structure.
- Prune mature trees conservatively to avoid excessive thinning and wounding.
- Observe "target pruning" to minimize decay development.
- Plant the right tree in the right place, so the needs of the tree match its environment.
- Irrigate & fertilize judiciously, considering the tree's native environment and past culture.
- Protect the tree from environmental degradation, such as soil compaction, de-icing salt, root injury, mechanical damage.
- Develop species-appropriate action for pest management.

What is a Certified Arborist?



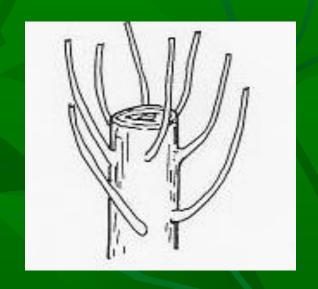




- Administered by the International Society of Arboriculture (ISA)
- Individuals who have achieved a level of knowledge in the art & science of tree care through at least 3 years experience & have passed the exam become Certified Arborists.
- Master Arborists require 8 years of Certification, and must write another exam.
- Both Certified and Master Arborists must also continue their education to maintain their status.

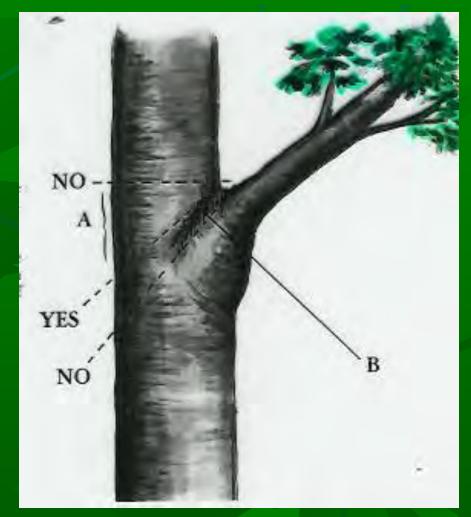
TOPPING

• Are large branches growing rapidly from topping cuts on big trees?





- Tree Topping Injures Mature Trees!
- Young trees can be topped to regulate size & shape.
- Proper early pruning can regulate tree height & make later topping necessary.
- If you think your mature tree needs topping;
 maybe you need a new tree, especially if it is under a power line.



A= Stem B= Branch Bark Ridge

What is Topping?

TOPPING = Topping is the most harmful tree pruning practice known. It is the indiscriminate cutting of tree branches to stubs or lateral branches that are not large erough to assume the terminal role. The most common reason given for topping is to reduce the size of the tree. People fear that their trees have become too large for their property and pose a hazard. Topping is not a viable method of height reduction & certainly does not reduce the hazard. In fact topping will make a tree more hazardous in the long term!

6 Ways to KILL YOUR TREE

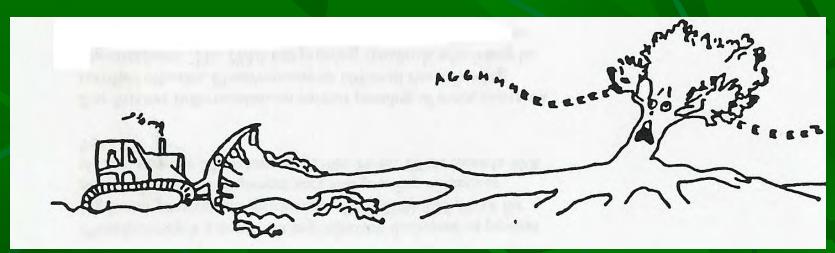
Pictures taken from Plant Amnesty

I. Forget to Water

- Water during the first two years and during droughts.
- Water deeply; a long slow trickle from the hose is good.



- II. Trench, Cover up or Compact the soil in the root zone. Construction injury & soil compaction are major killers of tree roots & beneficial root fungi. Salt and misuse of herbicides are also killers of roots & fungi.
 - A tree's roots are shallower and broader than generally believed. Tree roots need air and water and empty spaces in the soil.

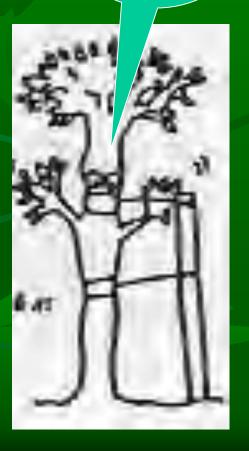


Develop tree protection plans before construction starts & tree trunks roots are injured!

- III. Leave on the tree stake ties to girdle the tree.
 - With staking, less is better. Remove ties as soon as the tree can stand on its own-one year, for most trees. Leave stakes to protect from mowers & bumpers for a while longer.

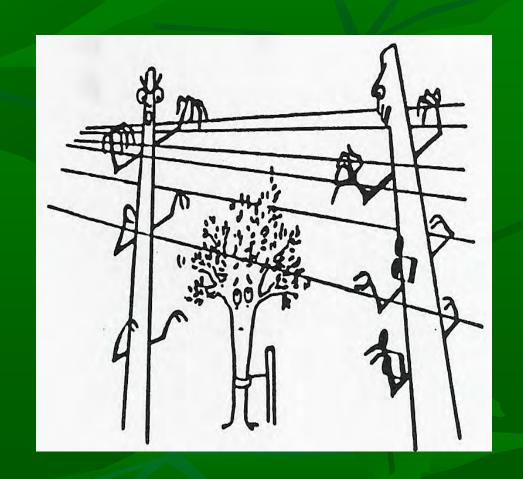


Gerard Fournier @ For Trees Company Ltd. 403-335-8965 HELP!
I'm
choking



IV. Plant a BIG tree in a small space

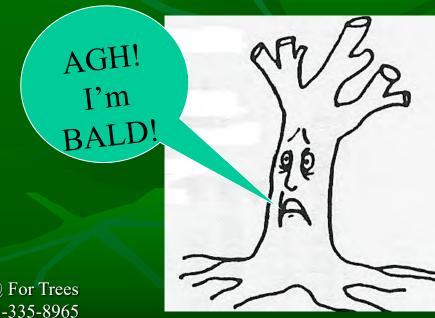
Find out how tall and wide your tree species gets and give it that much room. NEVER plant tall trees under wires. This dooms them to mutilation and certain death.



- V. Top your tree or make repeated heading cuts (Cut branch tips)
 - Topping & repeat pruning to keep trees small causes them to rot & starve.

 Topping removes a tree's nourishment source—the leaves that manufacture its food.
 - Besides killing the tree, topping or cutting branch tips doesn't even work to keep it small. Ironically, it has the opposite effect: it causes rapid and unruly regrowth which is not only ugly, but significantly weaker than the original limbs.





- VI. Weed-eat the bark or bash the trunk with the mower.
 - Trees die in slow motion, from a series of blows over time. Trees injured during construction generally give out five to ten years after the injury. With a little knowledge we can create a kinder, gentler world for our friends: the TREES!



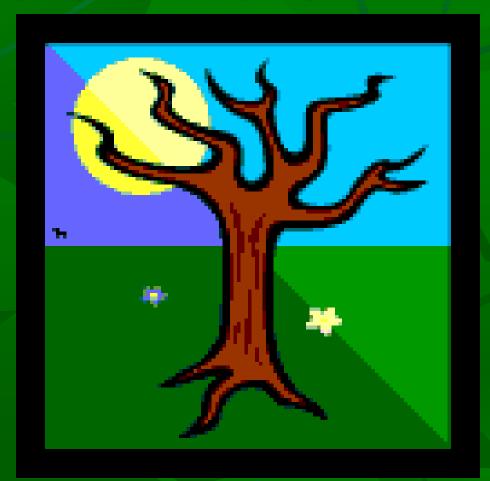
4 Reasons to Prune

HEALTH

SAFETY

APPEARANCE

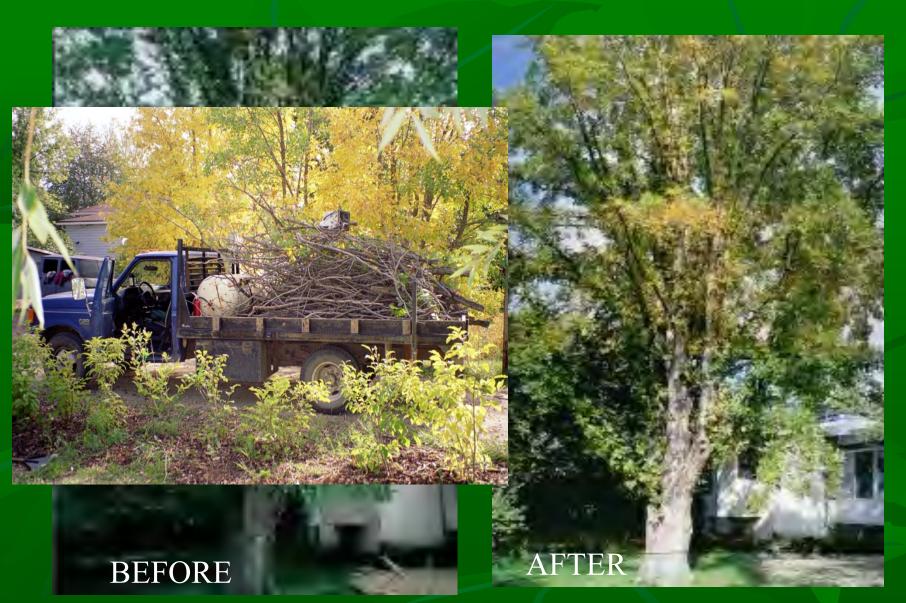
PRODUCTION



HEALTH

- Health involves the removal of crowded branches in order to increase the air circulation through the tree. By improving the air flow, wind breakage is reduced.
- Preventative pruning on such trees as those with weak or tight forks.





SAFETY

- Safety often involves pruning away from utility lines or right of ways.
 - (**DO NOT** attempt if the branches are within 3m/9 feet of the power lines, call the power company)
- Pruning out dead or dangerous wood that could fall causing injury.



APPEARANCE

- Appearance requires not only understanding the technical aspects of pruning but having an artistic eye.
- Appearance can be achieved by the shaping of large trees, espalier, topiary, and hedging



PRODUCTION

- Production involves
 pruning to improve the
 production of fruit or
 flowers on the tree or
 shrub.
- You need to understand the flowering times of these trees and shrubs e.g.: spring and summer flower



Prune Correctly

Too close or too long is always wrong!



Pruning Criteria What knowledge is required?

- Plant Species- the pruner should not only know the genus and species, but also the cultivar.
- There is so much variation in shape, speed of growth, even with plants of the same genus, that it's important to know before pruning is undertaken.
 - Example; Elms should only be pruned after November 1 and before April 1 (Dutch Elm Disease)

Pruning Criteria What knowledge is required? Cont'd.

- Growth Form- Most trees can be divided into two identifiable forms; ex-current and de-current.
- Trees can be pruned into a shape that is unnatural to them but they will always return to their natural shape.
- Speed of growth is influenced by the trees environment, however the species determines its ultimate size. A rule of thumb is the faster a tree grows the weaker it is. Generally fast growing trees could be pruned heavier than slow growers.

Pruning Criteria What knowledge is required? Cont'd.

- Time of Pruning-Light pruning & the removal of dead wood can be undertaken any time.
- Pruning should be avoided at the time that leaves are forming but during dormancy or after the leaves have matured is recommended.
- Suckers or waterspouts can be a serious nuisance problem on some plants. Over pruning will often stimulate the excessive production of suckers. The best time to remove suckers is during the summer.
- Pruning can in some cases transfer or attract serious disease or insect problems. Pruning should not take place when these pathogens or insect vectors will be attracted to the tree. An example of this are the insects that carry Dutch Elm Disease are attracted by fresh wounds during the growing season. Therefore, elms should not be pruned at this time. Many fungi and bacteria can be transferred by fresh wounds and pruning tools. Therefore, it is advisable to prune out diseased wood during dry weather and disinfect the tools between cuts.

Pruning Percent %

• Most arborists recommend that no more than 1/5 of the live wood should be removed from a tree at any one time. If a tree needs serious corrective pruning then do it over a two to three year rotation and the end result will be a healthier better looking tree.

• Over pruning can be extremely damaging to trees, resulting in sunscald, excessive suckering, a loss of photosynthetic area and even death of the tree.

Pruning Categories

- All tree pruning is not the same. What is considered a light pruning by one is considered excessive by another. The International Society of Arboriculture has published a consensus standard (ANSI A-300) for tree pruning that is recognized throughout North America and the World.
- This is not intended to be a "how-to" manual but to define the limits and criteria for arboricultural work, recognizing that regional practices may dictate variations in this standard.

Summary-Recommendations for Pruning Fruit Bearing Trees

- Cut out broken, dead or diseased branches.
- Where two branches closely parallel or one overhangs the other, remove the least desirable, taking into account horizontal & vertical spacing.
- Prune on the horizontal plane. Leave those laterals growing horizontally or nearly so on the main branches, & remove those that hang down or grow upward. This cannot always be done, but where possible it should be followed.

Summary-Recommendations for Pruning Fruit Bearing Trees cont'd.

- All varieties should be thinned out enough to permit exposure to sunlight & air.
- Where it is desirable to reduce the height of tall trees, cut the leader branches back moderately, to a well-developed horizontal lateral.
- The lower branches of broad-headed or drooping varieties should be pruned to ascending laterals.

Summary-Recommendations for Pruning Fruit Bearing Trees cont'd.

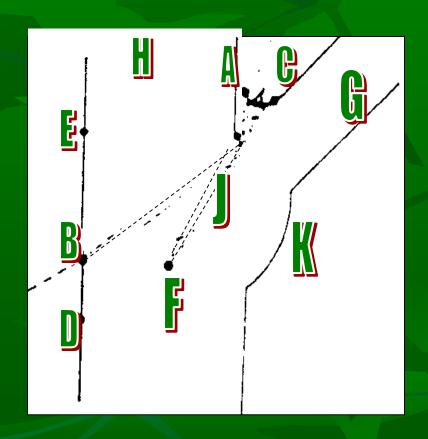
- Varieties tending to produce numerous twiggy, lateral growths, should have some of these removed to prevent overcrowding.
- Make collar cuts. Stubs encourage decay & canker, thus providing a source of injury to the parent branch or trunk. Never use pruning "paint".
- Prune moderately. Very heavy pruning is likely to upset the balance between wood growth & fruitfulness, & generally should be avoided.

Summary-Recommendations for Pruning Fruit Bearing Trees cont'd.

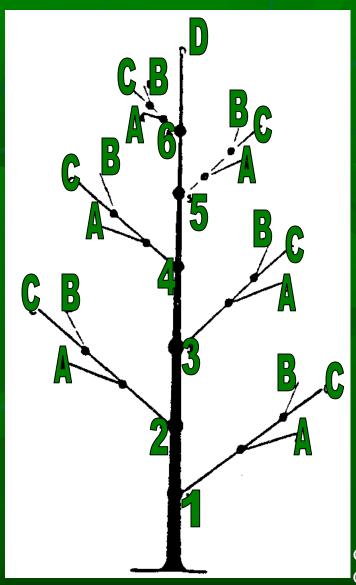
- Prune regularly. Trees that are given some attention each year are more easily kept in good condition than trees that are pruned irregularly.
- Do not remove a branch unless there is a very good reason for doing so. Remember that the leaves of a tree are the food-manufacturing organs. If the leaf area is reduced unnecessarily, the tree will be reduced in growth or fruitfulness, or both.

Removing a leader on a young tree

- To remove the leader stem on a young, small tree, cut from A to B
- Always stub cut the stem first so the branch being taken off does not tear.
- Point A is to the inside of the branch bark ridge (J) within the branch crotch.
- Point F is the beginning of the branch bark ridge.
- Point K is the branch collar, and G is the branch that will become the new leader.
- Improper cuts are A to E, A to D,C to E, C to B and C to D



Training young, small trees



- Most young trees can be trained to grow in many different shapes. Start with a tree that has the basic framework and growth pattern to give you what you want.
- All cuts should be made properly at nodes
- To have a tree with a long trunk, start early in the life of the tree to remove branches at positions 1,2,3. Do not remove more than a third of the living branches!
- For a more compact tree remove C's
- For a more upright tree, remove A's
- For a more open tree, remove B's
- To regulate height, remove D at position 6
- If a tree with a strong central leader is wanted remove other upright stems at position 6 that may be competing with D.
- If a large portion of the top must be removed make the cut at a node where there is a strong side branch.

Calgary & surrounding area & their climate

 As Calgary sprawls onto hilltops, along valleys and out across the plains, gardeners in opposite corners of the city can encounter vastly different growing conditions. Generally speaking the most rigorous conditions & the most limited choice of plants occur in the highest areas to the west & northwest. The downtown core & adjacent built-up areas are the "banana-belt", with the longest frost free season & the opportunity to grow the greatest variety of plants. Most neighbourhoods fall somewhere in between.

Chinooks damage plants!

 Chinook winds result in several types of damage to plants. The most obvious type of damage is caused by the drying winds. The low relative humidity characteristic in Calgary, along with the warm winter winds, accelerate the normally very slow winter water loss from plant tissues. The result can be drying twigs, bud damage or death, all of which result in the symptom referred to as tip-kill or die-back. The drying also results in the needle browning of evergreens.

Chinooks damage plants! Cont'd.

The warm weather characteristic of Chinooks can also injure plants by introducing a "false spring". This occurs when warm weather occurs for a long enough period of time to encourage plant buds to come out of dormancy, and begin growth. Subsequent cold snaps damage developing leaves and, on occasion, root development. This means that some plants are less likely to suffer from false springs than others, based on the genetic response information they carry within the plant cells.

Recommended evergreens for Calgary gardens in surrounding areas

Genera- Abies Common Name- Fir

Recommended evergreens for Calgary gardens in surrounding areas

GENERA	COMMON NAME	COMMENTS
Abies	Firs	
Abies balsamea	Balsam fir	Tall, narrow pyramidal likes snow cover
Abies concolor	White fir, Concolor fir	Large, conical outstanding long foliage.
Abies lasiocarpa	Alpine fir	Very narrow "church steeple"

FIR



Alpine Fir



White Fir



Balsam Fir

Recommended evergreens for Calgary gardens in surrounding areas

Genera- Picea Common Name- Spruce

Recommended evergreens for Calgary gardens in surrounding areas Cont'd.

GENERA	COMMON NAME	COMMENTS
Picea	Spruces	
Picea abies "abies x "Bird's Nest"	Norway Spruce Bird's Nest Fir	Tall, conical ,huge cones Dwarf, semi-hardy
Picea englemanii	Engleman Spruce	Native, very large, water loving tree
Picea glauca	White Spruce	Most common evergreen in Canada
Picea glauca albertiana conica	Dwarf Alberta Spruce	Grows in protected areas
Picea glauca densata	Black Hills Spruce	Dense, smaller tree from North Dakota

Recommended evergreens for Calgary gardens in surrounding areas Cont'd.

GENERA	COMMON NAME	COMMENTS
Picea	Spruce	
Picea pungens	Colorado Spruce	Larger, more robust
Koster		Prickly needles, comes in
Hoopsii		shades of Blue & Green
Moerheim		
Fastigiala		Large cultivars
Montgomery		Dwarf cultivars
Globosa		
Procumbena		
Picea omorkia	Serbian Spruce, Bosnian Spruce	Looks more like a fir

Spruce



- White Spruce
- 100 yrs old



ColoradoBlue Spruce

MontgomeryDwarf Spruce



Recommended evergreens for Calgary gardens in surrounding areas

Genera- Pinus Common Name- Pine

Recommended evergreens for Calgary gardens in surrounding areas Cont'd.

GENERA Pinus	COMMON NAME Pines	COMMENTS
Pinus albicaulis	Whitebark Pine	Native, hardy to acquire very attractive when young.
Pinus aristata	Bristlecone Pine	Oldest living thing on earth
Pinus barksiana	Jack Pine	Common northern tree
Pinus contorta latifolia	Lodgepole Pine	Alberta's Provincial tree
Pinus cembra	Swiss Stone Pine	Hardy, nice form
Pinus flexilis	Limber Pine	Oldest tree in Alberta, wonderful form when young & cultivated
Pinus mugho	Mugho Pine	Old favorite, tolerates different
	Swiss Mountain Pine Gerard Fournier @ For	conditions, small medium or large varieties.

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Recommended evergreens for Calgary gardens in surrounding areas Cont'd.

GENERA	COMMON NAME	COMMENTS
Pinus	Pines	
Pinus monticola	Western White Pine	Worthy of a trial
Pinus sylvestris	Scot's Pine	Many different cultivars. Very good
		all year-round tree."Ladoga" best in
		the west.
Pinus ponderosa	Ponderosa Pine	Long needles, awesome tree
	Western Yellow Pine	
Pinus nigra	Austrian Pine	Small version of Ponderosa
	Black Pine	
Pinus thuja	Asborvitae (cedar)	Good for shade
Pinus pyramidalis	Eastern White Cedar	must have shelter from wind
Pinus wareana	Ware's Siberian	Hardier

PINE



Ponderosa Pine



Bristlecone Pine



Lodgepole Pineseedling

Genera- Larix
Common Name- Larch
Genera- Pseudotsuga
Common- Douglas Fir

Recommended conifers for Calgary gardens in surrounding areas Cont'd.

GENERA	COMMON NAME	COMMENTS
Cocendentalis Lyalli larcina	Siberian Western Lyall's Subalpine Tamarack	Not a true evergreen but a conifer worthy of mention Native Native, smaller Native, narrower
Pseudotsuga menziesii	Rocky Mountain Douglas Fir	Large conifer, valuable timber tree, seldom available & under-used



Larch in the summer





Larch in Baker park about 75 years old

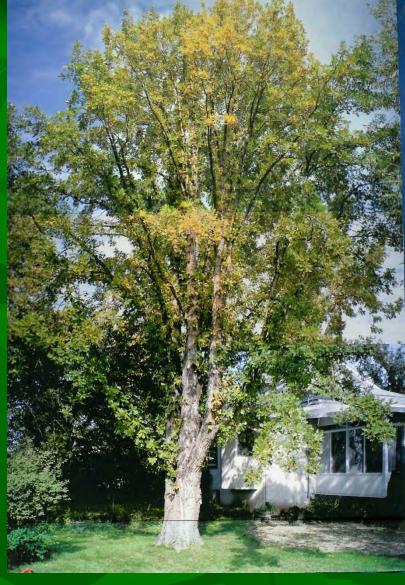
Genera- Quercus
Common Name- Oak

Latin	COMMON NAME	COMMENTS
Quercus macrocarpa	Bur Oak	Dark green, glossy lobed leaves Amber in the fall Bur Oak is a prairie hardy species Slow growing tree Good as a street tree as it is resistant to air pollution 10m height 8m wide

OAK



Bur Oak in summer



100 years old, Olds, AB

Genera- Ulmus Common Name- Elm

Latin	COMMON NAME	COMMENTS
Ulmus americana	American or White Elm	Largest and most graceful of all the Elms.
		Native to Eastern Canada and as far West as Saskatchewan.
		Elms enjoy wet sites and places where water could remain for a time in the spring but endures droughts well too.
Ulmus pumila	Siberian Elm	Finer foliage than American Weak wood and weedy

ELM



American Elm, Lethbridge



Genera- Fraxinus Common Name- Ash

Latin	COMMON NAME	COMMENTS
Fraxinus lanceolata subinterrigma	Green Ash	Native, hardy, tough durable tree Last to leaf out first to lose its leaves. Fast growing, good shade tree
Fraxinus mandshurica	Manchurian Ash	Sort of hardy Introduced from Asia
Fraxinus nigra	Black Ash	Likes wet areas, prone to insect attack (psyllid)

Ash



Black Ash



Green Ash

Genera- Malus Common Name-Apple/Crabapple

Latin	COMMON NAME	COMMENTS
Malus, domesticus	Apple	Widely cultivated for over 3,000 years. Many cultivars, both ornamental and edible.

APPLE



Thunderchild, Didsbury, AB



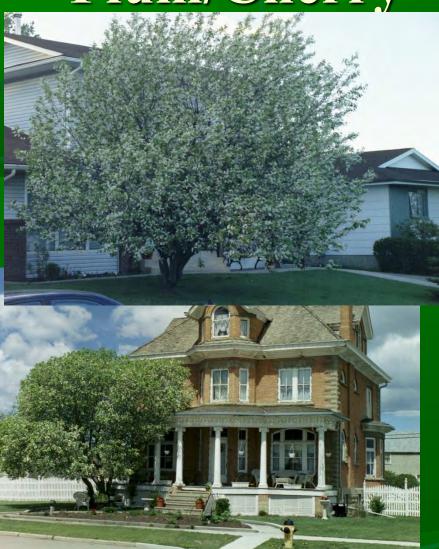


Apple Orchard, Bowden, AB

Genera- Prunus Common Name-Plum/Cherry

Latin	COMMON NAME	COMMENTS
Prunus padus commutata	Mayday	Small to medium tree First to flower in the spring Hybrid between European Bird Cherry and Common Chokecherry.
Prunus virginiana melanocarpa	Schubert Chokecherry	Very popular, purple leaf form of our common chokecherry

Plum/Cherry



Schubert Chokecherry



Mayday

Genera- Sorbus Common Name- Mountain Ash

Latin	COMMON NAME	COMMENTS
Sorbus americana	Anerican Mountain Ash	Small tree, likes full sun and well-drained soil, large sticky buds, excellent spring, summer, fall and winter interest
Sorbus aucuparia Sorbus decora	European Mountain Ash, Rowan Showy Mountain	Larger, highly adaptable, can grow in shade. Natural hybrid, more showy than
301043 466014	Ash	European, hardier than American

American Mountainash

• Fruit, flower, bud,





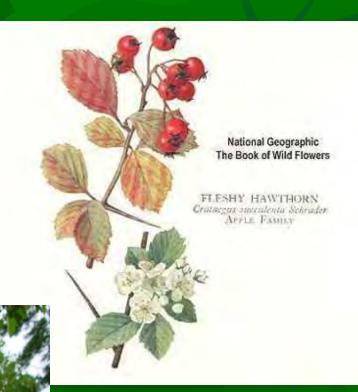
Genera- Crataegus Common Name- Hawthorne

Latin	COMMON NAME	COMMENTS
Crataegus succulenta	Fleshy hawthorne	Thorny native, makes an impenetrable hedge
Crataegus x mordenensis "Toba"	Toba Hawthorne	Thornless, pink, beautiful Snall tree

Hawthornes

Toba Hawthorne





Genera- Populus Common Name-Poplar

Latin	COMMON NAME	COMMENTS
Populus sargentii	Sargent's poplar	Very Large Native tree
Populus tristis	Himalayan	Weeping, graceful form
	Browntwig	
Populus tremula	Swedish columnar	Hardy, upright tree, very narrow
erecta	aspen	profile, excellent tall hedge or
		screen

Some popular Poplars

Sargent's poplar





Genera- Aesculus Common Name-Ohio Buckeye

Latin	COMMON NAME	COMMENTS
Aesculus glabra	Ohio Buckeye	Horsechestnut relative, beautiful small tree with interesting leaves and fruit

Ohio Buckeye

Buckeye foliage and fruit





Genera- Acer Common Name- Maple

Latin	COMMON NAME	COMMENTS
Acer negundo	Manitoba Maple	Likes it Manitoba, despises high altitude, dryness. Weak wood, insect prone. Grows fast
Acer ginnala	Amur Maple	Smaller tree, likes typical maple environment, also better for altitude and dryness, great fall colour

Maples

Manitoba Maple foliage and fruit





"Weird & Wonderful Trees"



- Experiment! You never know what might grow here.
- Peking Lilac in University Heights, Calgary

"Weird & Wonderful Trees"



- Experiment! You never know what might grow here.
- Norway Maple University Heights, Calgary

Web sites to visit

For Trees Company Ltd.

www.fortrees.ca

- International Society of Arboriculture (I.S.A.)
 Trees Are Good- www.treesaregood.com
- Prairie Chapter I.S.A

www.isaprairie.com

Landscape Nursery Trade Association (LANTA)

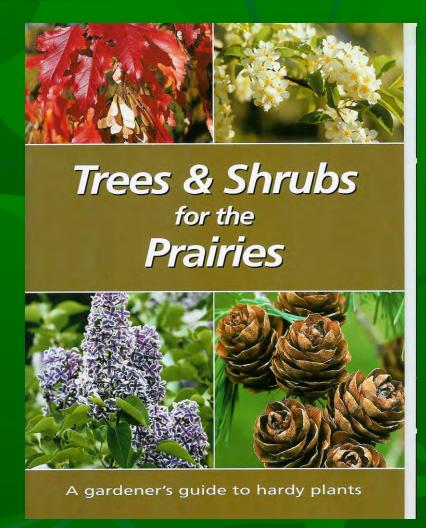
www.landscape-alberta.com

Enclosed brochures-written by the I.S.A.

- Why Hire an Arborist
- Tree Selection
- Buying High-Quality Trees
- New Tree Planting
- Pruning Young Trees
- Recognizing Tree Hazards
- Avoiding Tree & Utility Conflicts
- **THINK TREES**
- Certified Arborists
 - More information can be found and printed from the I.S.A.'s web site at www.treesaregood.com

FOR SALE

- Publication put out by Landscape Alberta Nursery Trades Association
- Regular retail \$ 7.95+6%Course price \$ 5.00



THANK YOU VERY MULCH!



Alex Shigo