Choosing the Right Tree

A Landowner's Guide to Putting Down Roots

What's Inside

1 • Introduction

2 • The Importance Of Choosing The Right Tree

3 • Getting To Know Your Site

4 • Choosing The Right Species For Your Site

5 • Choosing A Species That Meets Your Needs

6 • Choosing The Right Stock For Your Site

7 • Species Characteristics

8 • Directory of Contacts

Choosing The Right Tree is the result of a collaborative effort of the Ferguson Forest Centre (FFC), the Forest Gene Conservation Association (FGCA), and the Eastern Ontario Model Forest (EOMF) – who are working toward a better forest for tomorrow.

FERGUSON Forest Centre

Forest Gene Conservation Assoc at CH

EASTERN ONTARIO MODEL FOREST

EOMF's vision of forests for seven generations is a mosaic of healthy forest ecosystems within a landscape of rural and urban areas throughout eastern Ontario, providing long-term economic, social, and spiritual benefits, while ensuring a healthy environment that is valued by all.

The publication of this booklet was made possible because of the financial contributions of the following supporters:

Bog to Bog
Community Stewardship Council of Lanark County
Domtar Inc.
Grenville Land Stewardship Council
Hastings Stewardship Council
Leeds County Stewardship Council
Lennox & Addington Stewardship Council
Northumberland Stewardship Council
Ottawa Stewardship Council
Prescott-Russell Stewardship Council
Prince Edward Stewardship Council
Resource Stewardship S. D. & G.
Rideau Valley Conservation Authority
Victoria Land and Water Stewardship Council

To discover how you can become an EOMF member, or for more information, please visit www.eomf.on.ca.

EASTERN ONTARIO MODEL FOREST
P.O. Bag 2111,
Kemptville, Ontario
Canada K0G 1J0
Tel.: (613) 258-8241
Fax: (613) 258-8363

modelforest@eomf.on.ca
www.eomf.on.ca

FORÊT MODÈLE DE L'EST DE L'ONTARIO
C.P. 2111,
Kemptville (Ontario)
Canada K0G 1J0
Tél. : (613) 258-8241
Téléc. : (613) 258-8363

foretmodele@eomf.on.ca
www.eomf.on.ca/francais

Natural Resources Canada
Canadian Forest Service

Ressources naturelles Canada
Service canadien des forêts

Canada

ISBN 1-896392-89-X

About This Guide

The information in this guide is for landowners, in Ontario's Great Lakes St. Lawrence Forest Region, who have made the decision to plant trees or shrubs, and want to know what species are best suited to their particular site and needs. This booklet will help you:

- *Get to know your site*
- *Choose the right species for your site*
- *Choose a species that meets your needs*
- *Choose the right stock for your site*

1 Introduction

Virtually everyone would agree: trees and forests provide our society with so many benefits that they have become fundamental to our quality life. In fact, even the idea of a treeless city or countryside is unimaginable to most people. Even so, we have tended to take the future of forests for granted – we have severely disturbed and continue to disturb what was once a natural forested landscape. We must take better care of the trees we have. And, just as important, we need to plan for the forests of the future.

Whether it's to attract wildlife, grow timber or improve the local environment, each spring private landowners plant thousands of tree seedlings across Ontario. Although there can be any number of reasons why these seedlings are planted, each and every landowner starts off with the same overall objective – to have as many of the trees as possible survive to grow another year.

Now more than ever, landowners are asked to demonstrate good stewardship and to do it with a fraction of the public support they were once accustomed to. In Ontario, the large-scale, heavily subsidized planting programs that resulted in thousands of hectares of land returned to forest are a thing of the past. Although some planting programs are available, most require a significant investment on behalf of the landowner. In many cases landowners are choosing to purchase and plant trees on their own. Often they are unfamiliar with planting methods that will ensure good survival and, as a result, every summer many trees die unnecessarily. While it can be expected that some of the trees will die, it is important to minimize the chance of unnecessary and excessive mortality caused by either poor planting technique or improper species selection. One of the most important things a landowner can do is choose the right tree for the right site. Keep in mind that tree planting is expensive, and no tree planting operation is more expensive than a failed one. Choosing the right tree is the first step to ensuring that the landowner's efforts and money are not wasted.

Although you may never sit in its shade, plant a tree for those who will.

2 The Importance of Choosing the Right Tree

Jane Landowner spent a lot of time and money planting 10,000 red pine seedlings on her 4 hectare field. Her decision to plant red pine was primarily based on the cost and availability of the seedlings – at the time about 32 cents per tree. Unfortunately for Jane, the site was poorly drained and most of the trees died during the following spring. If Jane had spent more time assessing the site, and her choice of species she would have known that red pine does not do well in wet soils. She should have purchased a more suitable species like eastern white cedar and, although she may have had to pay more per seedling, the survival rate would have been much higher. In this case, the only thing that wasn't poorly drained was Jane's bank account!

Even if you know very little about how our native trees and forests grow it is probably a good bet that you are aware that different species of trees are found on different sites. Like all other types of plants, trees have specific growing requirements. As a result, each site has its own capability, and in the same way, its own limitations for growing trees. In the example, it was unfortunate that Jane had to find out the hard way that the relationship of species and site is an important one.

In this case, a lot of money was wasted planting a species of tree that was unsuitable for the site available. Obviously, one of the most important first steps a landowner can make is to ensure that the right species is chosen for their site.

Choosing the right species for the site does not always guarantee success, but choosing the wrong species is sure to guarantee failure. So spend some time determining what your site characteristics are and if you are still unsure, consult a professional.

3 Getting to Know Your Site

When forest managers refer to site characteristics, they are talking about a broad range of physical and chemical properties. Once you know a site's characteristics, you can determine what species will grow well (and those that won't!). In most cases, there will be a few species that should do well on the site – think about the many different species you find in most natural forests. This gives you a chance to base your final species selection on additional considerations like long-term objectives, species availability and cost.

Although your site may have several unique characteristics that separate it from others, only two, soil type and drainage, influence how well one species will do compared to another.

Soil Type

Although you don't have to be a soil scientist to plant trees, knowing a little about soil is valuable. Trees depend on soil to anchor them in place, provide moisture and nutrients, and to act as a seedbed for future generations. All soils are made up of four main ingredients: mineral particles (the bulk of the material), air spaces between the particles, water in varying amounts, and some organic matter from plant and animal debris. Classifying soils is primarily a quantification of the different ingredients found within it.

Mineral particles range from boulders as large as basketballs, to tiny particles so small they can't be seen without a powerful microscope. Soil texture is the relative proportion of the individual particles. A handful of dirt rubbed between your fingers will have a certain amount of 'grittiness' to it. The more abrasive the soil feels the larger the individual particles; the smoother the soil feels the smaller the particles. This grittiness (or the lack of it) is a relative measure of three main soil particle sizes – sand, silt and clay.

Sand has the largest particles, which feel "gritty". Silt has medium-sized particles that feel soft, silky or "floury". Clay has the smallest particles and feels "sticky". The amount of sand versus silt versus clay within the soil directly affects a tree species' ability to grow on a site.

There are three broad texture classes: sandy soils, loamy soils and clay soils. The term loam refers to soils with more equal proportions of sand, silt and clay. Although there can be many combinations of classes such as sandy loam, loamy sand or even clay loam, it is only really necessary to determine which of the three general classes you have.

Table 1 lists some common properties to look for when assessing a soil texture class. Grab a handful of soil – does it feel gritty or smooth? Squeeze the soil in your hand. Does it form a cast (clump)? Lightly wet the soil and try it again. Try to make a soil ribbon (Fig.1) by lightly wetting the soil until it feels like moist putty. Then, try to squeeze it between your thumb and forefinger upwardly into a thin flat ribbon – if a ribbon forms the soil contains clay. The longer the ribbon, the more clay it contains.

Figure 1: Making a soil ribbon

Source: www.gsfc.nasa.gov/globe/stories/clays.htm

Table 1: Soil texture class assessment properties

Soil texture class	Visual appearance	Reaction when squeezed in the hand		Ability to form a ribbon
		DRY SOIL	MOIST SOIL	
Sand soils	- Granular with easily detectable particles easily falls apart	- Will not form a cast or, cast easily	- Forms a cast that crumbles	- Cannot form a ribbon
Loam soils	- Low to moderately granular - Can form clumps/ clods when dry	- Forms a cast that can be handled relatively easily	- Forms a cast that can be easily handled	- Pure loam cannot form a ribbon - Loam with more silt and clay will form a fragile ribbon
Clay soils	- Fine texture with very few large particles - When dry, forms hard clumps	- Forms a cast that can be handled freely	- Forms a cast that can be worked and is cohesive	- Forms a long, flexible ribbon

Adapted from the US Department of Labor Web site: www.osha-slc.gov/doc/outreachtraining/htmlfiles/soiltex.html

Drainage

Drainage is the second site characteristic that needs to be assessed before making a species selection. How well your site holds water can have a dramatic impact on the long-term survival of different species. Drainage is influenced by soil texture. The smaller the particle size, the more water the site holds – a clay soil can hold considerably more moisture than a sandy soil. Soil depth, recent precipitation, topography, depth to the water table, and the amount and type of vegetation also influence drainage in one way or another.

Soil drainage can be classified into four different categories:

Well Drained water drains from the site rapidly; water seldom pools on the site even during a heavy rain or after snow melt;

Moderately Drained water may pool but only for brief periods;

Imperfectly Drained water pools on the site, sometimes for extended periods especially during the spring or in wet years;

Poorly Drained water drains slowly from the site throughout the year; soil may appear wet below the surface.

Determining the drainage of your site is relatively easy and usually comes from observing what happens to the site in the spring and fall, as well as during and after a rainfall.

Site Variability

The area you intend to plant may not be uniform especially if there is variation in topography. You should assess the entire site looking for differences that might affect your choice of species. If your site differs in either soil texture or drainage you may need to choose different species for certain areas.

Mary Landowner planted 100 red oak trees along her sloping laneway. After five years most of the trees were still alive although Mary noticed that the oaks in the higher, well-drained, end of the laneway were thriving while those in the lower portion which flooded every spring were just barely hanging on. Mary should have chosen a more suitable species for a wetter area such as green ash or tamarack.

4 Choosing the Right Species for Your Site

Now that you have determined both soil texture and drainage of your site, you can start to narrow down your species choice(s). Each species is adapted to a range of site conditions, which are categorized in Table 2.

More detail on the specific site requirements for the many different species is provided in the following pages. In addition, there are many other sources of information on individual tree species, their requirements, how they grow and how to look after them – consult one of the partners who helped produce this publication. Information on these agencies and others is listed at the back of this publication.

Table 2: Species recommended for different site conditions

Soil Texture	Natural Drainage	
	WELL TO MODERATE	IMPERFECT TO POOR
Sand	white pine, red pine, *European larch,*Norway spruce, red oak, white cedar, *hybrid poplar, *black locust	white pine, tamarack, black spruce, willow, green ash
Loam	white pine, red pine, *European larch, *Norway spruce, white spruce, black spruce, white cedar, sugar maple, red maple, white ash, green ash, red oak, black cherry, beech, basswood, black walnut, bitternut hickory, *hybrid poplar, *black locust, butternut, bur oak	white cedar, tamarack, black spruce, silver maple, red maple, willow, green ash
Clay	white pine, *European larch, *Norway spruce, white ash, green ash, white cedar, beech, *hybrid poplar, *black locust, black walnut, butternut, bur oak	tamarack, black spruce, silver maple, green ash, willow

** not native to Ontario*

5 Choosing a Species That Meets Your Needs

Choosing the right species is not just a matter of determining which ones will survive on your site and which won't. You need to consider your own long-term objectives for the trees. Are you planting a windbreak along a field, or are you establishing a stand of trees for wood products? Do you want to attract birds to your garden, or do you want to rehabilitate your cottage shoreline? What you want to do on the property affects how you will do it. The most appropriate choice of tree species is one that will thrive on your site once it is planted, and one that will also grow to meet your personal needs in the future. Table 3 lists some species that are suitable for some of the common tree planting objectives. Look for the species that are suited to your site and your objectives.

Susan Landowner would like to see a sugar maple forest returned to her old pasture. However, the current site is exposed and the loamy sand soils are somewhat compacted and undernourished after many years of grazing. She could plant thousands of sugar maple seedlings, but a local forest manager suggests that maple, which naturally regenerates in a shaded moist soil, will struggle and not do well for many years. He suggests planting white or red pine, which can handle the light drier soils and open conditions. As the pine grows it will shade the site. Sugar maple and white ash seed from Susan's neighbour's forest will seed in among the pine. Susan will also benefit from harvest and sale of the pine on her way to a naturally regenerated sugar maple forest.

Table 3: Commonly planted species by property objective

Objective	**Species** (* = non-native species in Ontario)
Wildlife (cover or mast)	Fruiting shrubs, ironwood, **red oak, bur oak, black cherry, cedar**, hemlock, **black walnut butternut**
Timber	**red pine, white pine, white spruce, white ash, red oak**, hard maple, ***Norway spruce**
Christmas trees	**white spruce, *Norway spruce**, balsam fir, *fraser fir, ***scotch pine, white pine**
Windbreaks	***Norway spruce, white spruce, cedar, *hybrid poplar**

In Table 3, the species in **bold** font are those that should do well on an average planting site – open and exposed old-field sites with varying amounts of competition from other plants such as grasses. The remaining species are those which regenerate naturally beneath a forest canopy in cool, moist forest soils that have lots of organic matter. These species, although they can survive in the open, do better when planted under or among existing trees.

Bill Landowner wanted to create a windbreak along the field behind his barn. He assessed his site and knows its soils are shallow and dry. From Table 3, he sees that cedar as well as white and Norway spruce would eventually provide adequate protection from the prevailing winds. But he chooses to plant only cedar because his shallow, dry site is not recommended for spruce (Table 2).

6 Choosing The Right Stock For Your Site

Seed Source

Now that you have chosen a species that is adapted to your site and that meets your needs, it is time to ensure that the trees you order from the nursery will be adapted to your climate. That is, make sure they were grown from seed that came from an area with a climate similar to the area where they will be planted.

Nurseries grow seedlings from seeds or from cuttings. Although most tree species grow across large geographic areas, over many generations local populations have evolved to be specially adapted to local climatic conditions and, as a result, seedlings need to be planted in the area from which their seed came. There are examples where trees have flourished once moved to a different area – but these situations must be viewed as lucky experiments. In many cases moving trees from one climate to another is an experiment that does not work out so well – ecologically or economically!

The map on the following page shows the different tree seed zones for Ontario. Trees grown from seed collected within one seed zone are genetically adapted to the climate of that zone and can be safely planted within the same zone. It is important to ensure that your stock came from the zone of your planting site. Ask about it when you order the stock. For more information on seed zones contact the Forest Gene Conservation Association (contact information appears at the back of this publication).

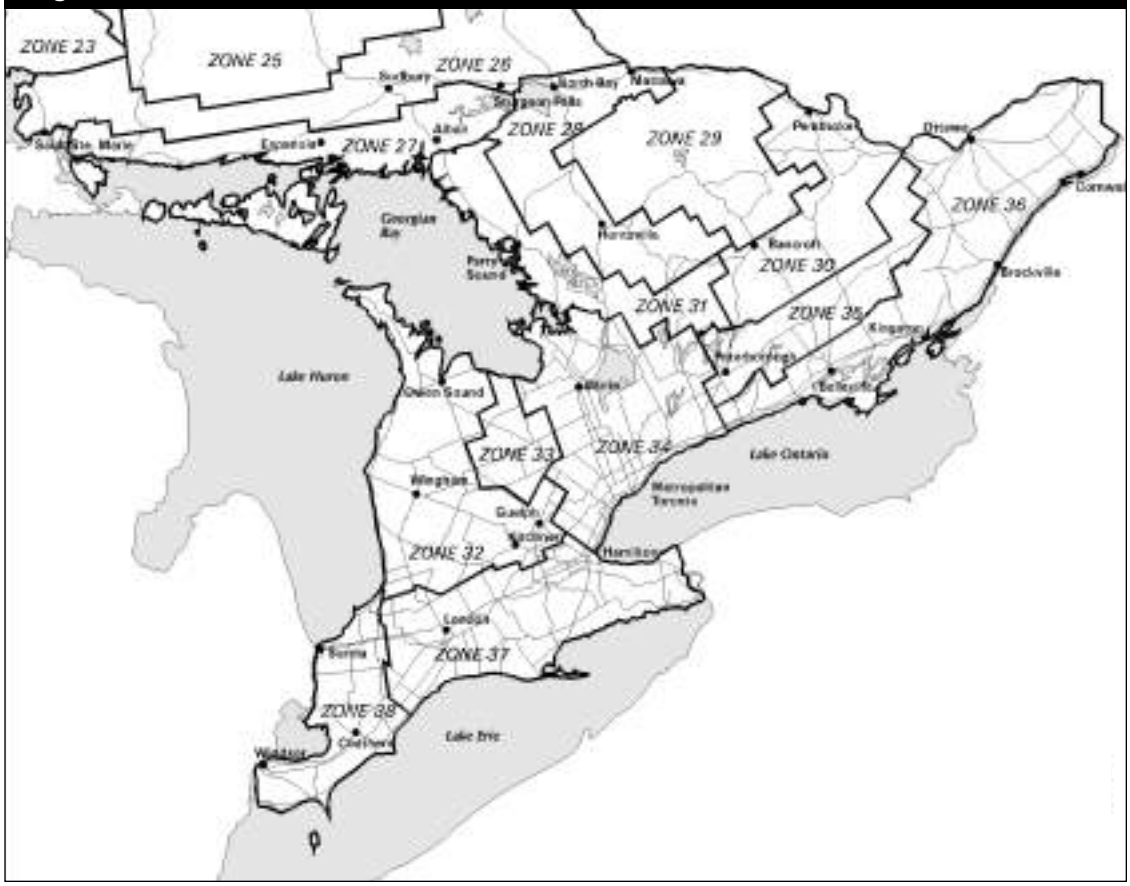
Tom Landowner lives outside Peterborough and his brother has a farm in the Niagara area. Tom wanted to reforest an area behind his house and tried to save some money by transplanting red oak seedlings from his brother's farm. Although the site was well suited to red oak, and the seedlings grew several feet each year, they were frequently killed back by the fall frosts and never grew that well. If Tom had known that seed source matters, he might have saved himself a lot of work.

Stock Type and Size

There are still some choices to make now that you've picked your species and seed source. The following tables describe bareroot stock that does well on open field planting sites. Small, container seedlings of many kinds are increasingly popular with nurseries, and larger trees are available as potted or balled and burlaped stock. Consider your site type and the resources you have for planting and tending before you choose. Ask your nursery or forest consultant for advice on what stock types will do well in your situation.

Tree Seed Zones of Southern Ontario

Figure 2: Ontario tree seed zones



Source: OMNR 1996

7 Species Characteristics

Native Evergreen Conifers

WHITE PINE

Pinus strobus

35 metres
(115 feet)
100+ years

Bareroot
Seedlings
3 years old
15-35 cm tall

Ontario's tallest tree and provincial tree

Appearance: Clusters of 5 soft, long, bluish-green needles. Smooth, young bark; dark, ridged mature bark.
Site and soils: Best on well drained to moist, sand and loams. Tolerates shade when young.
Rural plantings: Reforestation, timber plantations. Plant at 6ft. spacing. Grows 2-3 feet/year once established. Plant under canopy of taller trees to help avoid white pine weevil problems. Grows well with red pine, maple, ash and beech.
Urban settings; Prune for landscaping purposes; sensitive to salt and air pollutants.
Native to: Southern and central Ontario

RED PINE

Pinus resinosa

25 metres
(80 feet)
100+ years

Bareroot
Seedlings
2-3 years old
12-35 cm tall

Highest yielding conifer plantation species

Appearance: Clusters of 2 brittle, long, shiny dark green needles. Scaly, pinkish-gray bark, burrowed with age.
Site and soils: Good on infertile, well-drained, sandy, gravelly soils. Needs full sunlight.
Rural plantings: Reforestation, timber plantations. Plant at 8 feet by 8 feet. Grows 2-3 feet/year once established. Periodically thin to maintain health and growth. Grows well with white pine, aspen.
Urban settings: Reddish bark is striking with dark green foliage; doesn't thrive in inner city.
Native to: Ontario

WHITE SPRUCE

Picea glauca

25 metres
(80 feet)
100+ years

Bareroot
Seedlings
3 years old
15-35 cm tall

Appearance: Short, whitish or bluish-green needles; wide form.
Site and soils: Best on well-drained, moist silty soils. Tolerates poorly drained and heavy soils. Avoid dry sites. Tolerates shading. Slow initial growth, then 1-2 feet/year on good sites once established.
Rural plantings: Reforestation, timber plantations, Christmas trees. Plant at 8 feet by 8 feet, but thin periodically to maintain health and growth. Grows well with many species.
Urban settings: Windbreaks, landscaping.
Native to: Central and northern Ontario

RED SPRUCE

Picea rubens

25 metres
(80 feet)
100+ years

Bareroot
Seedlings
3 years old
15-35 cm tall

Appearance: Yellow to dark green needles, often pressed close to yellow-orange twig. Broad, open form.
Site and soils: Well-drained, moist, silty soils; cool moist sites. Very tolerant of shade. Best planted under taller trees or in small openings.
Rural plantings: Reforestation, wildlife cover. Grows well with white pine, balsam fir, yellow birch, sugar maple.
Urban settings: Uncommon
Native to: Central Ontario (but uncommon)

WHITE CEDAR

Thuja occidentalis

15 metres
(50 feet)
80+ years

Bareroot
Transplant
Seedlings
2-4 years old
15-60 cm tall

Appearance: Yellow to green scale-like leaves, turning bronzy green in winter
Broad, dense, columnar form; thin red-brown young bark; gray-brown mature bark in strips.
Site and soils: Does well on many sites; dry, wet or shallow soils. Tolerant of shade.
Rural plantings: Reforestation, site restoration, wildlife plantings for browse and cover. Slow growing. Grows well with white pine, balsam fir, yellow birch, sugar maple.
Urban settings: Common as hedges, windbreaks. Easily pruned.
Native to: Ontario

JACK PINE

Pinus banksiana

20 metres
(65 feet)
80+ years

Bareroot
Seedlings
2 years old
15-35 cm tall

Appearance: Clusters of 2 short, yellow-green needles. Thin, reddish-gray young bark; dark brown flaky and ridged mature bark.
Site and soils: Does well on many sites. Will tolerate sandy, gravelly sites. Needs full sunlight.
Rural plantings: Restoration of droughty sites, timber plantations on better sites. Grows in pure stands or with birch, aspen, red pine.
Urban settings: Unknown
Native to: Northern and central Ontario

Native Evergreen Conifers *(Continued)*

EASTERN HEMLOCK

Tsuga canadensis

30 metres
(100 feet)
100+ years

Appearance: Flat, blunt, finely toothed needles with shiny green top and whitened underside. Slender twigs, angled lead shoot; reddish-purple layers in outer bark.
Site and soils: Various soils but best on a cool, moist, well drained site. Very shade tolerant. Found on drier but cool sites (northern slopes) in warmer southern part of its range.
Rural plantings: Found in pure stands or mixed with yellow birch, white spruce, white pine, sugar maple and beech. A late successional species - shade tolerance makes it best suited to under planting or stand conversion, and not most afforestation situations. Deer browsing damage is usually very high.
Urban settings: Uncommon - not tolerant or urban situations which often include exposed sites, air pollution, heat extremes and compacted soils.
Native to: Central and southern Ontario

PITCH PINE

Pinus rigida

Only native conifer able to sprout from damaged/cut stumps

20 metres
(65 feet)
100 years

Bareroot
Seedlings
2 years old
12-20 cm tall

Appearance: Clusters of 3 brittle, long, yellow-green needles. Scaly, pinkish-gray bark, furrowed with age (similar to red pine).
Site and soils: Tolerates extreme sites - wet or shallow, dry soils. Needs full sunlight.
Rural plantings: Restoration of droughty sites. Grows in pure stands or mixed with species such as white oak, gray birch.
Urban settings: Drought and salt resistant, interesting form.
Native to: Small area along St. Lawrence River - east of Kingston, Ontario.

BALSAM FIR

Abies balsamea

Only native fir in eastern Canada

20 metres
(65 feet)
60 years

Bareroot
Transplant
Seedlings
4 years old
15-35 cm tall

Appearance Short, dark green needles, arranged along twig for flat branch effect. Very regular conical form, with spire-like tip. Gray, smooth, young bark with resin blisters; brownish, scaly older bark.
Site and soils: Adapted to a variety of soils. Very tolerant of shade.
Rural plantings: Reforestation, Christmas trees. Grows well in pure stands or with birch, aspen, white spruce or hemlock.
Urban settings: Windbreaks, landscaping.
Native to: Central and northern Ontario

Native Deciduous Conifers

TAMARACK

Larix laricina

Loses needles in autumn

25 metres
(80 feet)
80 years

Bareroot
Transplant
Seedlings
1-2 years old
15-35 cm tall

Appearance: Tufts of many soft, short, bluish-green needles; yellow and fall off in autumn. Thin, smooth, gray young bark; reddish-brown, scaly, mature bark.
Site and soils: Grows best on moist, sandy soils. Tolerates wet, poorly drained sites. Needs full sunlight.
Rural plantings: Reforestation. Fast initial growth on good sites. Grows well in pure stands or with birch, aspen, spruce. Sensitive to chemical weed control.
Urban settings: Uncommon, but has brilliant yellow autumn colour, light green spring colour.
Native to: Northern and central Ontario

NORWAY SPRUCE

Picea abies

30 metres
(100 feet)
100+ years

Bareroot
Seedlings
2-3 years old
12-35 cm tall

Appearance: Short, dark green needles. Thin, reddish-brown young bark; dark purplish-brown, scaly, mature bark.
Site and soils: Best on well-drained to moist, sand and loams (similar to white pine). Avoid wet or dry sites. Tolerates some shade.
Rural plantings: Timber plantations. Plant at 8 feet by 8 feet. Grows 2-3 feet/year on good sites.
Urban settings: Windbreak species, distinctive drooping branches, drought susceptible.
Native to: Europe and Asia; adapted to southern and central Ontario

---

SCOTS PINE

Pinus sylvestris

Can be invasive and displace native species in natural areas

25 metres
(80 feet)
80 years

Bareroot
Seedlings
2 years old
15-35 cm tall

Appearance: Clusters of 2 short, bluish- to grayish-green needles. Thin, orange, papery young bark; gray-brown, scaly plates on mature bark.
Site and soils: Sandy, gravelly sites; other poor quality sites. Needs full sunlight.
Rural plantings: Common Christmas tree, otherwise not recommended. Fast growth. Subject to insect and disease damage, especially in a pure stand.
Urban settings: Common; distinctive orange, papery inner mature bark.
Native to: Europe and Asia

Exotic Evergreen Conifers *(Continued)*

AUSTRIAN PINE

Pinus nigra

20 metres
(65 feet)
80+ years

Bareroot
Seedlings
2 years old
10+ cm tall

Appearance: Clusters of 2 long, dark green needles; broad form. Yellow-brown, flaky young bark; dark gray-brown, furrowed mature bark.
Site and soils: Tolerates a wide variety of soils.
Rural plantings: Not recommended.
Urban settings: Very common ornamental; drought and salt resistant; interesting form.
Native to: Southern Europe

MUGHO PINE

Pinus mugo

Low shrub to
small tree
Medium-lived

Bareroot
Seedlings
2 years old
12-20 cm tall

Appearance: Long, dark green needles; upsweeping branches, low spreading form. Dark gray, scaly bark.
Site and soils: Adapted to a variety of soils; used for erosion control.
Rural plantings: Not recommended.
Urban settings: Very common ornamental (requires pruning to keep good form); salt tolerant; common along roadways
Native to: Mountains of southern Europe

Exotic Deciduous Conifers

EUROPEAN LARCH

Larix decidua

Loses needles in autumn

25 metres
(80 feet)
80 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Tufts of many soft, short, bright green needles. Yellow and fall off in autumn.
Site and soils: Grows best on moist, sandy soils. Needs full sunlight.
Rural plantings: Plantations for wood products at 8 feet by 8 feet spacing. Fast initial growth on good sites. Sensitive to chemical weed control.
Urban settings: Ornamental, brilliant autumn colour; pretty, bright green spring colour.
Native to: Europe

JAPANESE LARCH

Larix kaempferi

Loses needles in autumn; limited frost hardiness

25 metres
(80 feet)
80 years

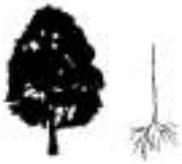
Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Tufts of soft, short, grayish or bluish-green needles. Orange-brown twigs; needles turn yellow and fall off in autumn.
Site and soils: Grows best on moist, sandy soils. Needs full sunlight.
Rural plantings: Plantations for wood products at 8 feet by 8 feet spacing. Fast initial growth on good sites. Sensitive to chemical weed control.
Urban settings: Ornamental, brilliant autumn colour; pretty, bright green spring colour.
Native to: Mountains of Japan

SUGAR MAPLE

Acer saccharum

Canada's National tree



30 metres
(100 feet)
100+ years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Deep yellow-green lobed leaves, broad-spreading open grown form. Smooth, young bark; dark, irregularly-ridged mature bark.
Site and soils: Best on deep, fertile, well-drained to moist loams. Tolerates shade when young. Responds well to thinning.
Rural plantings: Reforestation, maple sugar orchards. Grows well with white pine, hemlock and other broadleaf trees.
Urban settings: Sensitive to salt and air pollutants; hot, dry conditions and compacted soils. Brilliant autumn colour.
Native to: Central and southern Ontario

BLACK MAPLE

Acer nigrum

as for
Sugar Maple

Note: Closely related to sugar maple; known for its higher sugar content. Leaves have a droopy appearance and a fuzzy underside.

SILVER MAPLE

Acer saccharinum

25 metres
(80 feet)
80 years

Bareroot
Seedlings
1-2 years old
15-20 cm tall

Appearance: Light green (lighter below), deeply cut leaves; spreading, open grown form. Smooth, young bark; gray-brown, shaggy, mature bark.
Site and soils: Best on deep, fertile, moist loams (withstands seasonally wet soils). Needs full sunlight.
Rural plantings: Reforestation, plantations for pulp and timber. Grows fast.
Urban settings: Aggressive roots and brittle branches make it unsuitable to inner city areas. Pale yellow autumn colour.
Native to: Central and southern Ontario

Native Broadleaf Trees *(Continued)*

RED MAPLE

Acer rubrum

25 metres
(80 feet)
80 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Light green (lighter below), lobed, toothed leaves; wide open grown form. Smooth, young bark; gray-brown, scaly, ridged, mature bark.
Site and soils: Adapted to a variety of soils - wet and dry. Best on moist sites. Tolerates some shade when young.
Rural plantings: Reforestation, plantations for pulp and timber.
Urban settings: Common ornamental, brilliant autumn colour - deep red.
Native to: Central and southern Ontario

RED OAK

Quercus rubra

25 metres
(80 feet)
100+ years

Bareroot
Seedlings
1-2 years old
12-20 cm tall

Appearance: Dull green bristle-tipped leaves. Smooth, lined young bark; grooved and ridged, dark, mature bark.
Site and soils: Best on deep, well-drained sandy loam. Tolerates drier conditions. Avoid heavy, wet soils. Tolerates some shade when young. Responds well to thinning.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows well with pines and other broadleaf trees.
Urban settings: Large, attractive ornamental. Tolerates urban conditions.
Native to: Southern and central Ontario

WHITE OAK

Quercus alba

30 metres
(100 feet)
100+ years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Bright green, round, lobed leaves. Pale gray, scaly young bark; similar mature bark with a reddish cast.
Site and soils: Best on deep, well-drained loams. Avoid dry or poorly drained conditions. Tolerates some shade when young.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows well with pines, hemlock and other broadleaf trees.
Urban settings: Large, attractive ornamental.
Native to: Southern and eastern Ontario

BUR OAK

Quercus macrocarpa

25 metres
(80 feet)
200+ years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Shiny, green, round lobed leaves; corky twigs and branches. Rough, furrowed young bark; deeply furrowed mature bark.
Site and soils: Adapted to a range of soils - dry to moist, sand or clay. Tolerates some shade.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows well with pines, hemlock and other broadleaf trees.
Urban settings: Tolerant of urban conditions. Large, attractive ornamental.
Native to: Southern and eastern Ontario

WHITE ASH

Fraxinus americana

30 metres
(100 feet)
100 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Dark green compound leaves with 5-9 leaflets. Light gray young bark; finely furrowed mature bark.
Site and soils: Deep, well-drained upland soils. Avoid dry, infertile sites. Tolerates some shade.
Rural plantings: Reforestation, mixed species timber plantations. Grows well with white pine, balsam fir, yellow birch, sugar maple.
Urban settings: Common urban tree, columnar form, yellow-purple autumn colour.
Native to: Southern and central Ontario

GREEN ASH

Fraxinus pensylvanica

20 metres
(65 feet)
60 years

Bareroot
Seedlings
1-2 years old
12-20 cm tall

Appearance: Yellow-green compound leaves with 5-9 leaflets. Light gray young bark; finely furrowed mature bark.
Site and soils: Adapted to a wide range of soils. Can tolerate some flooding. Tolerates some shade when young.
Rural plantings: Reforestation. Grows well with silver maple, cottonwood and willow.
Urban settings: Common urban tree, columnar form. Yellow autumn colour.
Native to: Southern and central Ontario

Native Broadleaf Trees *(Continued)*

BLACK ASH

Fraxinus nigra

20 metres
(65 feet)
100 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Dark green compound leaves with 7-11 leaflets. Light gray, soft, corky young bark; scaly mature bark.
Site and soils: Adapted to imperfectly drained soils. Can tolerate some flooding. Needs full sunlight.
Rural plantings: Reforestation. Grows well with cedar, balsam fir, silver and red maple.
Urban settings: Common urban tree, columnar form.
Native to: Ontario

HACKBERRY

Celtic occidentalis

15 metres
(50 feet)
100 years

Bareroot
Seedlings
2 years old

Appearance: Simple, bluish-green leaves with elongated tip. Gray to light yellow-brown bark with warty, irregular ridges.
Site and soils: Adapted to a range of soils - moist or dry. Tolerates some shade.
Rural plantings: Reforestation, wildlife food source. Grows well with cedar, balsam fir, silver and red maple.
Urban settings: Small, elm-like tree. Tolerant of urban conditions.
Native to: Southern and eastern Ontario

WHITE ELM

Ulmus americana

10-30 metres
(30-100 feet)
30-100 years

Bareroot
Seedlings
1 year old
15+ cm tall

Appearance: Simple toothed, dark green leaves; arching umbrella crown. Gray-brown furrowed bark; ash-gray with age.
Site and soils: Adapted to a range of sites. Tolerates most sites. Moderately shade-tolerant.
Rural plantings: Windbreaks, restoration. Can be short-lived due to Dutch elm disease.
Urban settings: Tolerant of urban conditions.
Native to: Ontario

BLACK WALNUT

Juglans nigra

Edible nuts

30 metres
(100 feet)
100+ years

Bareroot
Seedlings
1 year old
15+ cm tall

Appearance: Yellow-green compound leaves with 14-22 leaflets. Light brown, scaly young bark; dark, broad ridges on mature bark.
Site and soils: Best on deep, well-drained, fertile sites. Avoid dry sites. Needs full sunlight.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows fast on good sites. Grows well with other broadleaf trees. Produces juglone, which can be toxic to some tree species (pines).
Urban settings: Large, attractive ornamental; for larger green spaces.
Native to: Southwestern Ontario; becoming naturalized in eastern Ontario

---

BUTTERNUT

Juglans cinerea

Edible nuts; susceptible to butternut canker

25 metres
(80 feet)
80 years

Bareroot
Seedlings
1 year old
15+ cm tall

Appearance: Yellow-green compound leaves with 11-17 leaflets. Pale gray, smooth young bark; pale gray, widely ridged mature bark.
Site and soils: Best on well-drained fertile loams. Avoid drier and poorly-drained conditions. Needs full sunlight.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows well with other broadleaf trees.
Urban settings: Large, attractive ornamental.
Native to: Southern and eastern Ontario

BLACK CHERRY

Prunus serotina

20+ metres
(65 feet)
80 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Simple, bright, shiny green leaves. Smooth, dark young bark with dash-like marks; dark, rough, scaly mature bark.
Site and soils: Adapted to a wide range of soils. Needs full sunlight.
Rural plantings: Reforestation, timber plantations, wildlife food source. Grows well with other broadleaf trees.
Urban settings: Attractive; white spring flowers and dark, scaly bark.
Native to; Southern and eastern Ontario

Native Broadleaf Trees *(Continued)*

WHITE BIRCH

Betula papyrifera

25 metres
(80 feet)
80 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Simple, dull green, toothed leaves. Thin, smooth, dark red young bark; white, papery mature bark.
Site and soils: Adapted to a wide range of sites. Needs full sunlight.
Rural plantings: Reforestation. Grows well with pines, spruce, poplar, balsam fir, yellow birch and sugar maple.
Urban settings: Common urban tree.
Native to: Ontario

OHIO BUCKEYE

Aesculus glabra

15 metres
(50 feet)
80 years

Bareroot
Seedlings
1 year old
12-20 cm tall

Appearance: Yellow-green, palmately compound leaves with 5-7 leaflets. Light gray young bark; Rough, dark brown, furrowed and scaly mature bark.
Site and soils: Adapted to a wide range of sites. Can tolerate some flooding.
Rural plantings: Not recommended outside its native range.
Urban settings: Showy, late spring flowers.
Native to: Southwestern Ontario. Has demonstrated some cold hardiness for areas beyond its natural range, such as eastern Ontario.

HONEY LOCUST

Gleditsia triacanthos

20 metres
(65 feet)
90 years

Bareroot
Seedlings
1 year old
15+ cm tall

Appearance: Bright green compound leaves with 14-30 leaflets; spiny twigs. Smooth, brown, spiny young bark; Scaly-ridged mature bark.
Site and soils: Adapted to moist, rich, bottomland soils. Needs full sunlight.
Rural plantings: Not recommended.
Urban settings: Common ornamental. Casts a light shade. Tolerant of urban conditions.
Native to: Extreme southwestern end of Ontario

Exotic Broadleaf Trees

BLACK LOCUST

Robinia pseudoacacia

Spreads readily by seed and root sprouts; invasive in open sites

25 metres
(80 feet)
90 years

Bareroot
Seedlings
1 year old

Appearance: Dull green compound leaves with 7-19 leaflets; spiny twigs. Smooth, brown, spiny young bark; thick, brown, furrowed mature bark.
Site and soils: Adapted to a wide range of soils. Best in moist soils. Needs full sunlight.
Rural plantings: Site restoration (mine spoils, gravel pits). Good species for honey production.
Urban settings: Showy, late spring flowers.
Native to: Eastern USA, naturalized in southern and eastern Ontario

---

HORSE CHESTNUT

Aesculus hippocastanum

25 metres
(80 feet)
100 years

Bareroot
Seedlings
1 year old
12-20 cm tall

Appearance: Yellow-green, palmately compound leaves with 5-9 leaflets; green, spiked husk on nuts. Smooth, dark gray young bark; Fissured, scaly mature bark.
Site and soils: Best on well-drained deep soils.
Rural plantings: Not recommended. Can be invasive in forest conditions
Urban settings: Showy, white flowers. Tolerates urban conditions.
Native to: Southeastern Europe

HYBRID POPLAR

Populus hybrids

25 metres
(80 feet)
40 years

Bareroot
Seedlings
1 year old
100 cm tall

Appearance: Simple, dark green leaves. Smooth, green young bark; light yellow-gray, rough, mature bark.
Site and soils: Best on moist to well-drained loams.
Rural plantings: Plantations for pulp. Grows very fast, but is short-lived.
Urban settings: Windbreaks, screens.
Native to: Ontario and Europe (hybrids of poplars from both areas)

Native Small Trees and Shrubs

JUNEBERRY *Amelanchier species*

Edible fruit

5-10 metres
(15-30 feet)

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Small tree; simple green leaves. Smooth, gray young bark marked by vertical lines; rough, scaly mature bark.
Site and soils: Adapted to a wide variety of sites. Best in moist to dry sites. Tolerates some shade. Best in full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: Showy, white flowers; small, shrubby or tree form.
Native to: Ontario

RED ELDERBERRY *Sambucus pubens*

4 metres
(15 feet)

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Large shrub or shrubby tree; compound leaves with 5-7 leaflets; plump, red buds. Warty, gray-brown mature bark.
Site and soils: Adapted to a wide range of soils. Best in moist soils. Best in full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: White late spring flowers. Tolerant of air pollution.
Native to: Ontario

BLACK ELDERBERRY *Sambucus canadensis*

Edible autumn fruit

3 metres
(10 feet)

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Large shrub or shrubby tree; compound leaves with 5-11 leaflets. Warty, gray-brown mature bark.
Site and soils: Adapted to low ground sites. Tolerates some shade. Best in full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: Fragrant; white early summer flowers; small shrubby tree form.
Native to: Ontario

PIN CHERRY *Prunus pensylvanica*

10 metres
(30 feet)
40 years

Bareroot
Seedlings
2 years old
15+ cm tall

Appearance: Small tree; simple leaf with a tapered tip. Smooth, dark, reddish young bark; mature bark has horizontal papery strips.
Site and soils: Adapted to many sites. Needs full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: White spring flowers; small tree form.
Native to: Ontario

WILD PLUM *Prunus nigra*

Edible late summer fruit

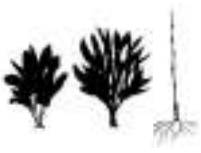
9 metres
(30 feet)

Bareroot
Seedlings
1 year old
15+ cm tall

Appearance: Small tree; simple leaf with a tapered tip; thorny twigs. Smooth, dark brown young bark with thorns; scaly mature bark.
Site and soils: Best on moist loam soils. Needs full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: White, then pink spring flowers; small tree form.
Native to: Southern and eastern Ontario

WILLOW *Salix species*

Ask for native species (many exotics are grown)



Shrub and tree
forms

Bareroot
Seedlings
1 year old
30+ cm tall

Appearance: Large shrub to large tree forms; simple green leaves. Smooth, gray young bark; rough, furrowed mature bark.
Site and soils: Adapted to many sites. Tolerates flooded conditions. Needs full sunlight.
Rural plantings: Site restoration, wildlife cover.
Urban settings: Small shrubby or small tree form.
Native to: Ontario

NANNYBERRY *Viburnum lentago*

5 metres
(15 feet)

Bareroot
Seedlings
3 years old
30+ cm tall

Appearance: Large shrub or small tree; simple yellow-green leaves; blue-black autumn berries. Gray-brown, fine, scaly mature bark.
Site and soils: Adapted to a wide range of soils. Best in moist soils. Best in full sunlight. Tolerates some shade.
Rural plantings: Restoration, wildlife food source.
Urban settings: White late spring flowers; shrub or small tree form.
Native to: Ontario

Native Small Trees and Shrubs *(Continued)*

HIGHBUSH CRANBERRY *Viburnum trilobum*

Can be confused with European species

3 metres
(10 feet)

Bareroot
Seedlings
3 years old
30 cm tall

Appearance: Large shrub; lobed maple-like leaves. Smooth, wiry branches; rougher mature bark.
Site and soils: Adapted to moist sites. Best in full sunlight.
Rural plantings: Restoration, wildlife food source.
Urban settings: White spring flowers; red berries; shrub form.
Native to: Ontario

RED OSIER DOGWOOD *Cornus stolonifera*

2-3 metres
(6-10 feet)

Bareroot
Seedlings
2 years old
15^{+} cm tall

Appearance: Low shrub; simple leaf; bluish-white autumn berries. Smooth, red bark.
Site and soils: Damp lowland sites. Needs full sunlight.
Rural plantings: Restoration, wildlife food source.
Urban settings: White spring flowers; small shrub; bright red winter stems.
Native to: Ontario

ALTERNATE LEAF DOGWOOD *Cornus alternifolia*

10 metres
(30 feet)
40 years

Bareroot
Seedlings
2 years old
15^{+} cm tall

Appearance: Simple, smooth, margined leaf. Thin, reddish-brown young bark; shallow-ridged mature bark.
Site and soils: Best on moist loam soils. Tolerates shading.
Rural plantings: Site restoration (roots readily to stabilize soils), wildlife food source.
Urban settings: White spring flowers; small tree form with flat layered branching.
Native to: Southern and eastern Ontario

GRAY DOGWOOD *Cornus racemosa*

2-3 metres
(6-10 feet)

Bareroot
Seedlings
2 years old
15^{+} cm tall

Appearance: Large shrub; simple, smooth, margined leaf; white August berries. Thin, reddish-brown young bark; shallow-ridged mature bark.
Site and soils: Best on moist loam soils. Tolerates shading. Best in full sunlight.
Rural plantings: Reforestation, wildlife food source.
Urban settings: White spring flowers; small tree form with flat layered branching.
Native to: Southern and eastern Ontario

8 Directory of Contacts

Eastern Ontario Stewardship Councils

Ontario Stewardship Councils link landowners to information, expertise and funding to ensure that good forest management practices flourish.

Ottawa Stewardship Council
Box 599, 5524 Dickinson Street,
Manotick, ON K4M 1A5
(613) 692-0014
joff.cote@mnr.gov.on.ca

Prescott-Russell Stewardship Council
Box 430, 31 St Paul Street,
Alfred, ON K0B 1A0
(613) 679-0936
suzanne.lafrance@mnr.gov.on.ca

Resource Stewardship S. D. & G.
Box 429, 18045 County Road #2,
Cornwall, ON K6H 5T2
(613) 933-7671
jim.hendry@mnr.gov.on.ca

Grenville Land Stewardship Council
Box 605, Oxford Avenue
Brockville, ON K6V 5Y8
(613) 342-8528
jack.henry@mnr.gov.on.ca

Leeds County Stewardship Council
Box 605, Oxford Avenue
Brockville, ON K6V 5Y8
(613) 342-8526
gary.nielsen@mnr.gov.on.ca

Community Stewardship Council of Lanark County
Box 37, Sunset Boulevard
Perth, ON K7H 3E2
(613) 267-4200 ext.153
jeff.ward@mnr.gov.on.ca

Ontario Ministry of Natural Resources
P.O. Bag 2002
Kemptville, ON K0G 1J0
(613) 258-8204
www.mnr.gov.on.ca

For other councils see
www.ontariostewardship.org

Eastern Ontario Conservation Authorities

A network of organizations dedicated to conserving and managing natural resources on a watershed basis.

Cataraqui Region
Box 160, 1641 Perth Road
Glenburnie, ON K0H 1S0
(613) 546-4228
crca@cataraquiregion.on.ca

Mississippi Valley
(Ottawa west, Lanark)
Box 268
Lanark, ON K0G 1K0
(613) 259-2421
info@mvc.on.ca

Raisin Region (Cornwall area)
Box 429, 18045 County Road 2
Cornwall, ON K6H 5T2
(613) 938-3611
info@rrca.on.ca

Rideau Valley
(Ottawa, Leeds & Grenville)
Box 599, 1128 Mill Street,
Manotick, ON K4M 1A5
(613) 692-3571
postmaster@rideauvalley.on.ca

South Nation Conservation
(Ottawa east, Stormont, Leeds and Grenville, Dundas and Glengarry)
Box 69, 15 Union Street
Berwick, ON K0C 1G0
(613) 984-2948
ppiitz@nation.on.ca

For other Conservation Authorities see
www.conservation-ontario.on.ca

Other Contacts

Ferguson Forest Centre
Growing primarily native species of trees and shrubs hardy to the south central Ontario climate.
275 County Road 44
Kemptville, ON K0G 1J0
(613) 258-0110
info@seedlingnursery.com

Landowner Resource Centre
A one-window information shop for landowners.
Box 599, 5524 Dickinson Street,
Manotick, ON K4M 1A5
(613) 692-2390
info@lrconline.com

Ontario Woodlot Association
A network of regional chapters offering a greater voice to the woodlot owner.
275 County Road 44
Kemptville, ON K0G 1J0
(613) 258-0110
info@ont-woodlot-assoc.org

Domtar Inc.
Box 40, 810 Second Street West
Cornwall, ON K6H 5S3
(613) 932-6620
www.domtar.com

Boisés Est
A Francophone organization promoting sound management of private woodlots.
770, 3e Concession
Plantaganet, ON
K0B 1L0
japsoucy@alumni.uottawa.ca

Bog to Bog
An opportunity for landowners to help create an ecological connective corridor between Mer Bleue and Alfred Bog.
Box 633, 4858 Champlain Street,
Bourget, ON K0A 1E0
(613) 487-3183
b2b@eisa.com

Eastern Ontario Certified Forest Owners
A group of landowners who have or are seeking group forest certification for their woodlots.
P.O. Box 2111
Kemptville, ON K0G 1J0
(613) 258-8422
sdavis@eomf.on.ca

Mohawk Council of Akwesasne
Department of the Environment
CIA #3, 101 Tewasateni Road
Cornwall Island, ON K6H 5R7
(613) 936-1548
hlickers@akwesasne.ca

Forest Gene Conservation Association
Suite 233, 266 Charlotte Street
Peterborough, ON K9J 2V4
(705) 755-3284
barb.boysen@mnr.gov.on.ca
www.fgca.net