Forest 2020

PRACTICAL GUIDE

AFFORESTATION OF WILDLANDS

Canada

Québec

AFFORESTATION OF WILDLANDS

Forest 2020
Plantation Demonstration and Assessment Program in Quebec

Practical Guide
2005

by

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Photos:
Cover page: Typical wildland, Bas-Saint-Laurent, Jean Ménétrier
Captions (from left to right):
- White spruce plantation (6th year) on wildland, Bas-Saint-Laurent, Jean Ménétrier
- Norway spruce plantation (70 years), Jean Ménétrier
- Hybrid larch plantation (2nd year) on wildland, Capitale nationale, Stéphane Charest
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introduction

At the turn of the century, the Canadian Council of Forest Ministers reviewed the global trends shaping forest management policy and practices, and initiated a dialogue on a new vision for the sustainability of Canada's forests. That new vision is Forest 2020.

The Forest 2020 Plantation Demonstration and Assessment program sets out an innovative and diversified Canada-wide approach to help Canada meet increasing global demand for wood products and derive greater social and economic prosperity from all forest resources, while ensuring an acceptable level of forest ecosystem conservation.

This initiative seeks to capitalize on the high potential offered by plantations of fast-growing species that have the capacity to produce yields greatly exceeding the average yields of natural forests, in conjunction with intensive silviculture of second-growth forests. More specifically, it is aimed at the afforestation of non-forested lands in order to produce timber (lumber) and extract carbon dioxide from the atmosphere (carbon sequestration). This approach is one of the means of addressing climate change recognized under the Kyoto Protocol.

References: http://www.ccmf.org/foret2020/index.html
http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/forest2020pda/index_e.html

This document presents, in simple and succinct form, the basic knowledge deemed essential to the establishment of plantations under this program. The information is grouped under three main themes:

- Eligibility of sites;
- Choice of species;
- Operations to be carried out from 0 to 8 years, to reach the free-to-grow stage.

A wildland afforestation project selection sheet is appended.

Failure to take into account any of the life stages of a plantation can compromise the efforts made. Land selection and site preparation, species selection in relation to soil characteristics, the planting of seedlings and the various interventions required to reach the free-to-grow stage, along with follow-up and disease and pest monitoring, are all aspects that affect the success and yield of a plantation. The silvicultural approach must therefore be considered as a whole.

Afforestation of a wildland requires the use of machinery for site preparation (brushing, ploughing, harrowing) and for mechanized maintenance and tending operations, especially on large areas.

eligibility of sites

Preliminary evaluation of the wildland allows the forest advisors of private forest development agencies to select wildland sites that meet the criteria of Forest 2020.

The eligibility criteria, defined in keeping with the Kyoto Protocol, are intended to give rise to projects involving the conversion of grassy or brush wildland to new forests that will support the manufacture of value-added wood products and the sequestration of atmospheric carbon.

Kyoto Protocol definitions:

1) Forest: land area covering at least one hectare with trees established through natural regeneration, reforestation or seeding that have the potential to reach a height of at least 5 m at maturity and attain at least 30% tree crown cover.

2) Afforestation: the conversion of non-forested land to forested land through planting or seeding. For example, planting carried out after logging is not afforestation within the meaning of Kyoto.

The potential offered by the wildland site must meet the program objectives and standards. A general assessment will be made of the potential productivity of a site, e.g. its capacity to attain the anticipated yields for one or another of the species to be grown, based mainly on its edaphic characteristics (soil properties).

The total investments required for this purpose also influence the site selection process under the program. Wildland with marginal site conditions that do not meet the selection criteria (e.g. poorly drained sites or sites with thin soil) will not be considered.

Site eligibility criteria under Forest 2020

- It is not a forest within the meaning of Kyoto and afforestation is possible;
- Minimum of one hectare of land in a single block;
- Minimum width of 30 m in the case of a strip of land;
- The site is accessible and the topography allows for the use of machinery;
- Drainage ranges from fast to imperfect;
- Soil texture ranges from fine to coarse. Heavy clay and sand are excluded;
- Soil depth is at least 30 cm.

N.B.: If these criteria are not met in the preliminary evaluation, the proposed wildland project will be eliminated
(See the appendix: Wildland Afforestation Project Selection Sheet)

choice of species

In view of the program objectives, the choice in Quebec is limited to the most productive species for obtaining value-added wood, namely white spruce (WS), Norway spruce (NS), hybrid larch (HL), red pine (RP) and hybrid poplar (HP).

The choice of species is guided by the following factors:

1) site characteristics: bioclimatic conditions and edaphic (soil) characteristics;
2) production objective, e.g. type and quality of desired products;
3) hardiness of the species or variety, sensitivity to insects, disease and other pests;
4) means and commitment to ensure the long-term silvicultural follow-up required.

Site characteristics

The adaptation of the species or variety to the environmental conditions of the site is a crucial factor for plantation success. It is therefore important to be very familiar with the site's climatic and edaphic characteristics.

• Climate

The species chosen must be able to tolerate the extreme climatic conditions of the site to be afforested and derive maximum benefit from the entire growing season. For mixed and deciduous forest zones, there are no constraints in terms of the choice of species, but enclosed lowlands, which are subject to late or early frosts, must always be avoided.

• Soil

Drainage, texture, fertility and pH are the main soil factors to consider. The presence of indicator plant species, together with vegetation density and height, provide a general picture of site quality (see Table 1).

All of the species need good water availability, but sites where the water table is too close to the surface or that are subject to prolonged seasonal flooding should be avoided. Norway spruce and hybrid larch must not be grown on such sites, as their growth is significantly slower in very wet environments, and red pine is particularly sensitive to those conditions (see Table 2). Hybrid poplar, white spruce and Norway spruce can be used on fine-textured soils if drainage is good or moderate.

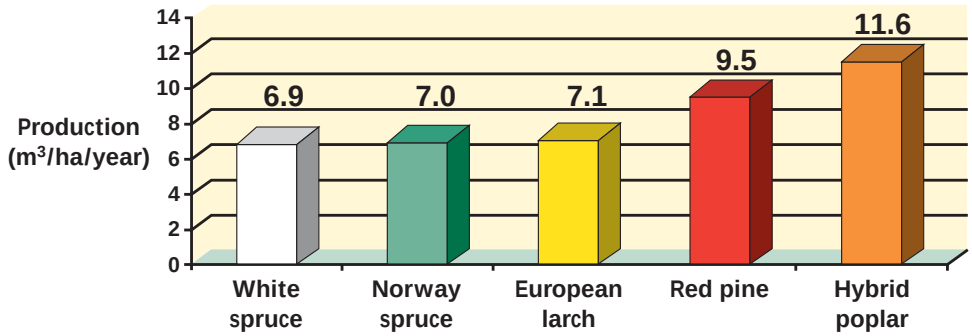
Coarse-textured soils, generally less fertile, are more suitable for less demanding species such as red pine or hybrid larch, although the latter must be limited to sandy loam. If spruces and hybrid poplar are used on such sites, they will not achieve maximum productivity. On generally more fertile sites, red pine, a frugal species, will exhibit a smaller growth increment than the other species.

Hybrid poplar, which is very demanding, requires more fertile and deeper soils (at least 40 cm) and a steady supply of water to achieve its growth potential and the anticipated yields.

Objectives and yield

Forest 2020 centres on the production of various wood products. It should be noted, however, that a strong emphasis on lumber production is more effective in meeting the objective of CO_2 sequestration.

The species chosen greatly influences plantation yields (see Figure 1). Among the species proposed for this program, hybrid poplars have the best potential, while white spruce and Norway spruce generally have lower yields.



Note: The mean production of hybrid larch is greater than that of European larch and is close to, if not greater than, that of red pine. Hybrid poplar requires more intensive forest management than the softwood species.

Figure 1: Predicted mean annual production (total volume) for sites of average fertility (site index) with a planting density of 2000 seedlings/ha for softwoods and 1100 seedlings/ha for hybrid poplar.

These yields also depend on the quality of the site. On the most fertile sites, the yield can reach 10.7 m³/ha/year for Norway spruce, 11.9 m³/ha/year for red pine and more than 15 m³/ha/year for hybrid poplar.

Growth rate also varies from one species to another. Larch and poplar grow very fast when young and reach maturity more quickly (in 20 to 30 years) than spruces, whose juvenile growth is slower. Nonetheless, all of these species have specific requirements and it is important to analyse the site characteristics discussed below before choosing the species.

Adaptation of the species to the environmental conditions of the site

The Ministère des Ressources naturelles et de la Faune (MRNF) distributes high-quality seedlings in keeping with selection criteria based on research findings, species requirements, geographic range and hardiness, e.g. adaptation to local environmental conditions. For example, the softwood (conifer) species are adapted to more varied climatic and site conditions than are hybrid poplars.

Seedlings of the five species selected for the afforestation program can only achieve their full growth potential if they are planted on soils that are suitable for them. Four important criteria need to be analysed: drainage, texture, fertility and pH.

The values obtained for these soil criteria will result in one most favourable choice, along with some possible choices (yield loss) and some unsuitable ones, which need to be ruled out (see Table 2).

Softwoods generally have a great capacity to adapt to site conditions, which means that several choices may be possible for a given site, or conversely, the same species can be used on different sites.

Insects, diseases and other pests

No species is immune to damage caused by climate and pests (insects, rodents, cervids and disease) but the recommendations in this document should help to reduce the risks. By following the advice provided in this guide and using the requisite cultural methods, participants will be able to grow vigorous trees that will be less susceptible to damage. Some of the species or varieties selected for the program are more tolerant of abiotic damage and pests.

Table 1: Indicator plants of various soil types

Type of soil	Indicator plants	
Heavy clay	Canada thistle	*Cirsium arvense*
	Common dandelion	*Taraxacum officinale*
	Plantain	*Plantago spp.*
	Annual sow-thistle	*Sonchus oleraceus*
	Coltsfoot	*Tussilago farfara*
Acidic	Ericaceae in general	
	Poverty oatgrass	*Danthonia spicata*
	Hawkweed	*Hieracium spp.*
	Wild strawberry	*Fragaria virginiana*
	Oxeye daisy	*Chrysanthemum leucanthemum*
	Mullein	*Verbascum thapsus*
	Nettle	*Urtica spp.*
	Sheep sorrel	*Rumex acetosella*
	Knotgrass	*Polygonum aviculare*
	Silvery cinqfoil	*Potentilla argentea*
	Field horsetail	*Equisetum arvense*
	Trailing blackberry	*Rubus hispidus*
	Steeplebush	*Spiraea tomentosa*
	Coltsfoot	*Tussilago farfara*
Rich	Lamb's-quarters	*Chenopodium album*
	Pigweed	*Amaranthus spp.*
	Chickweed	*Stellaria media*
	Nodding trillium	*Trillium cernuum*
	Beaked hazel	*Corylus cornuta*
Wet	Silver maple	*Acer saccharinum*
	Black ash	*Fraxinus nigra*
	Speckled alder	*Alnus rugosa*
	Red-osier dogwood	*Cornus stolonifera*
	Willow	*Salix spp.*
	Broad-leafed meadowsweet	*Spiraea latifolia*
	Blue joint	*Calamagrostis canadensis*
	Sphagnum moss	*Sphagnum spp.*
Dry	Juniper	Juniperus communis
	Mustard	Brassica spp.
	Pineapple-weed	Matricaria matricarioides
	Quackgrass	Agropyron repens
	Silvery cinqfoil	Potentilla argentea
	Grey birch	Betula populifolia
	Jack pine	Pinus banksiana
	Pin cherry	Prunus pensylvanica
	Raspberry	Rubus idaeus
	Steeplebush	Spiarea tomentosa

Sources: C. Leduc (MAPAQ); G. Gershuny and J. Smile (1986): *The soul of soil: a guide to ecological management;* S.B. Hill and J. Ramsay (1977): Weeds as indicators of soil conditions.

The means and the commitment to ensure long-term cultural follow-up

It should be borne in mind that growing hybrid poplar entails a greater technical, material and financial investment than softwood species.

For all the species, the operations to be carried out from 0 to 8 years to reach the free-to-grow stage are critically important. However, these operations are not sufficient on their own and ongoing plantation follow-up and silvicultural interventions are required over the longer term.

Table 2: Species selection grid

Selection of species relative to soil characteristics							
Legend		■ **To be avoided***	**Species**				
		▲ **Possible**					
		● **Favourable**	**WS**	**NS**	**HL**	**RP**	**HP**
Drainage	Fast (class 1)		■	■	■	●	▲
	Good to moderate (classes 2 and 3)		●	●	●	●	●
	Imperfect (class 4)		▲	■	■	■	▲
Texture	Fine (clays)		▲	▲	■	■	▲
	Medium (loams)		●	●	●	●	●
	Coarse (sandy loam)		▲	▲	●	▲	▲
	Coarse (loamy sand)		■	■	■	▲	■
Fertility	Low		■	■	▲	▲	■
	Average		●	●	●	●	▲
	Excellent		●	●	▲	▲	●
pH	Very acidic (2 to 4)		■	■	■	▲	■
	Acidic (4 to 6)		●	●	●	●	●
	Neutral (6 to 7.5)		●	●	▲	▲	●

* Excluded under program

operations to be carried out from 0 to 8 years to reach the free-to-grow stage

A plantation has reached the free-to-grow stage when practically all the trees have access to the environmental resources (light, water, nutrients) necessary for their growth. To attain high yields in wildland afforestation, the operations and investments of the first few years are of crucial importance.

The operations that are important in order to reach this stage quickly are:

- site preparation;
- quality of seedlings and planting;
- management of competing vegetation;
- disease and pest monitoring;
- regular follow-up.

Site preparation

• Why?

Site preparation operations help to mix and loosen the upper soil horizons and facilitate planting, seedling establishment and growth by enhancing several aspects: soil structure and water exchange, warming of soil, competition for light and availability of water and nutrients.

In the case of wildland, this approach makes it possible to mix the organic and mineral horizons and to increase root penetrability by eliminating the residual effects of compaction caused by livestock or the repeated passage of machinery.

• When?

This work should be carried out in the year preceding planting, from mid-August to mid-September, to prevent excessive regrowth of vegetation at the end of the season and during the following spring; however, post-treatment temperature and rainfall conditions influence effectiveness. In exceptional cases, depending on the type of site and preparation, this work may be done in the spring when the soil is dry.

- How?

Wildland requires ploughing followed by cross-harrowing approximately three weeks later, preferably with a tine harrow. Ploughing depth must be at least 25 cm. In grassy wildland, it is better to plough the vegetation under with a disc plough. It may be advantageous to delay a second harrowing until the spring, before the seedlings are planted.

Where shrubs are present, brushing with a rotary cutter may be necessary before ploughing.

In many cases, boggy patches can be made productive through a few well-oriented plough furrows that promote surface drainage.

For softwoods, preparation in strips approximately 1.5 m wide (five plough furrows or one rototiller pass) can be considered, particularly in the case of a site with obstacles (boulders or rocky outcrops). This avoids having to work the entire area, but the long-term advantages, including better growth, mechanization and easier tending, are also lost.

An unplanted peripheral strip of land, at least 4 m wide, can be used to delimit the plantation and facilitate machinery movement.

Generally available agricultural equipment is suitable for most operations, except in more challenging or unusual conditions which call for specific treatments and machinery suited to the job.

It is important to maintain safe working conditions at all times to prevent accidents and to respect the limitations of the agricultural machinery so as to avert costly mechanical breakdowns.

Planting of seedlings

- When?

Planting takes place in the spring, in cool weather and in moist soil, as soon as the nursery delivers the seedlings. All the seedlings must be planted before budbreak (generally from May to early June depending on the region). For containerized seedlings, planting must not be done too late in the season (after mid-July) and definitely not in the fall.

- How?

On wildland, because of the grassy vegetation, it is essential to use larger softwood seedlings with a low or balanced height/diameter (H/D) ratio. This also protects seedlings from being crushed and broken.

After the seedlings are delivered, they must be kept moist until planting by storing them in a cool, shady location, in a heeling-in trench or shed, and by watering them as needed. Before planting, the roots of poplar seedlings will benefit from soaking in water for 24 hours.

Planting is carried out using the standard tools (planting shovel or dibble) and the usual precautions: planting the root collar 2.5 cm below the ground line to prevent the wicking effect and to keep the root system from drying out, burying the roots, ensuring vertical placement of seedlings and firmly packing the soil around the roots (do not compact the soil strongly with your foot). Additional requirements apply for poplars (see box). Careful planting enables seedlings to become established more easily.

Aligning the seedlings by using pegs and string to mark inter-seedling spacing is strongly recommended and it is essential for hybrid poplar. This facilitates the passage of machinery during mechanized tending operations, reducing the risk of trunk injury.

Prescribed seedling spacing and planting density per hectare are given in Table 3. Over the longer term, planting density determines the silvicultural treatments that are required to maintain the growth of the plantation and its performance in terms of quality and quantity (yield).

Table 3: Planting densities

Species	Spacing (m within the row x m between rows)	Density (seedlings/ha)
White spruce	2 x 2.5	2000
Norway spruce	2 x 2.5	2000
Hybrid larch	2 x 3	1666
Red pine	2.5 x 2.5	1600
Hybrid poplar	3 x 4	833

The main causes of failure include poor choice of clone or species, seedling quality, microsite or planting, a specific characteristic of the soil, damage caused by insects, disease or wildlife or unfavourable climatic conditions at the time of planting.

For hybrid poplar:

- Planting depth: **30 cm minimum, the root collar must be buried at least 15 cm** to stimulate adventitious root development, increase stability and promote water absorption;
- Poplar buds are particularly fragile; care should be taken during handling and planting. In the event of shoot dieback, rejuvenation of the stem early in the season gives the tree a second chance;
- The use of several clones, planted in small homogeneous blocks on the same site, provides protection against insect outbreaks or other damage;
- The varieties used are relatively or completely disease-resistant;
- Hybrid poplar should not be planted near large larch stands or plantations (high risk of transmission of rust disease). The appropriate distance depends on stand density, the topography and the prevailing winds. There is no recognized rule in this regard, except to exercise caution.

Management of competing vegetation

• Why?

Control of competing vegetation makes it possible to allocate the majority of water, light and nutrient resources to the trees. Steps are taken to control herbaceous vegetation especially because of its adverse effect on water availability. This is also beneficial in reducing the impact of crushing under the weight of the snow as well as in controlling the rodent population. When tillage is done as part of this operation, it helps to promote warming of the soil.

Hybrid poplar, red pine and hybrid larch do not tolerate competition for light. It is therefore essential to control competing vegetation, and this is especially true for hybrid poplar, which is sensitive to competition for nutrients and water as well as light

• When?

Release of softwoods must be carried out as soon as the upper half of the plant is no longer receiving enough light because of the canopy formed by nearby species. The quantity of light available can be measured very precisely with a portable radiometer, but visual assessment is commonly used. Where shrub vegetation is present, it is necessary to intervene as soon as the trees are receiving less than 60% of the light that would be available without competing vegetation.

On wildland, it is usually necessary to clear the herbaceous vegetation from around the trees. This is particularly important in the year of planting and over the following two to three years, especially for hybrid larch (a shade-intolerant species). With good site preparation, the first intervention can be put off until the third year, but release is always necessary as soon as a decrease in growth is observed.

It is preferable to carry out the treatment early in the season, so that the trees benefit from a full growing season. Effective action during the first few years will promote rapid attainment of the free-to-grow stage.

- How?

Manual release of trees using a scrub cutter equipped with a grass and brush blade is the method most commonly used. Vegetation must be cut to at least 10-15 cm above the ground. This treatment can be combined with shallow tillage between the rows using a rototiller or harrow. Tillage maximizes access to resources and promotes initial growth. When the machinery is available, woody vegetation can be destroyed by using a rotary cutter.

For hybrid poplar:

- **Starting in the first year, keep the soil bare by harrowing. Mowing is not sufficient. If the trees are perfectly aligned, cross-harrowing can be done; if cross-harrowing is impossible, manually weed along the row. The first pass (harrow or rototiller) in June is followed by 2 to 3 additional treatments.**
- **Harrowing from the first year helps prevent superficial rooting and reduces the risk of cutting the roots during subsequent maintenance operations;**
- **Take action before the grass reaches a height of 15 cm;**
- **Repeat these treatments the following two years;**
- **Do not till any deeper than 10 cm in order to avoid affecting the roots and be careful not to damage the stems.**

Disease and pest monitoring

All plantations require disease and pest monitoring. By detecting signs of the presence of insects,, disease or other pests (see Table 4) at an early stage, the necessary measures can be adopted to avert serious damage.

On wildlands, special attention must be devoted to the presence of and the damage caused by small rodents (field mice, voles) and cervids.

Table 4: Main causes of damage

N.B.: Major causes shown in bold type	**White spruce**	**Norway spruce**	**Red pine**	**Hybrid larch**	**Hybrid poplar**
Mammals	Rodents	Rodents	Rodents	Rodents **Porcupine**	Rodents **Vole** **White-tailed deer**
Insects	White pine weevil Budworm Yellowheaded spruce sawfly	**White pine weevil** Budworm Yellowheaded spruce sawfly	White pine weevil Redheaded pine sawfly Northern pine weevil	Sawfly Casebearer Eastern larch beetle	Poplar-and-willow borer Cottonwood crown borer Bronze poplar borer Poplar borer
Diseases	Shoot blight Needle rust or cast	Snow blight Shoot blight Needle cast	Needle cast Armillaria root rot **Scleroderris canker** **Anosus root disease**	Cytospora canker Brown spot needle blight **Armillaria root rot**	Septoria canker Rusts Leaf spot
Other causes	Frost Drought	Frost Drought **Winter drying**	Snow Glaze ice	Frost Snow Glaze ice	Frost **Winter sunscald** Wind Snow, glaze ice

Norway spruce plantation:

- **In July, it is important to watch out for signs of the presence of white pine weevils, such as drooping or wilting leaders (mandatory annual follow-up between 3 and 12 years).**
- **Treatment: cut and destroy the infected leaders according to the applicable recommendations (See PIF brochure) to eliminate the annual generation of adults. Despite the effect on crown appearance, Norway spruce has a good capacity to correct deformations caused by the insect.**

Red pine plantation:

- **Scleroderris canker is the main disease to monitor. The first symptoms appear in the spring on the lower branches (death of buds, discoloration at base of needles, cankers); hence it is important to maintain good aeration at the base of the trees.**
- **Treatment: systematically prune out infected branches on all trees to the first healthy-looking whorl below the highest level of infection (See CFS brochure No. LFC3); remove and destroy any dying or severely diseased trees.**

Hybrid poplar plantation:

- **The important diseases to monitor for in poplar are septoria canker (currently absent from the Lower St. Lawrence–Gaspé region) and leaf rusts. Also monitor for vole damage to the root collar and, if necessary, place spiral guards on the trees or set bait traps (inverted 'T' bait station made of ABS pipes allowing rodents to see the light) on the periphery of the planting. Note that the quality and frequency of soil maintenance and operations around the seedlings are of paramount importance for reducing rodent numbers and the damage they cause.**

Other sources of information on insects and diseases:

Forest Conservation Branch of the MRNF:
http://www.mrnf.gouv.qc.ca/forets/fimaq/collections/index.jsp

Natural Resources Canada :
http://www.cfl.scf.rncan.gc.ca/IMFC-IDCF/choix_e.htm
http://www.glfc.cfs.nrcan.gc.ca/treedisease/index_e.html

Regular follow-up

In the event of localized failure, carefully analyse the causes and consequences before undertaking fill planting. For poplars, fill planting is not much recommended owing to the strong competition that occurs among trees of different ages.

Regular visits to the plantation are indispensable for checking the health and vigour of the trees, but also for carrying out interventions required for the particular species planted or for specific situations. This provides the opportunity for early pruning of hybrid poplar, occasional release of certain trees, straightening of shoots that have become crushed under hay, the pruning of double-leader trees and the timely detection and treatment of various types of damage and other problems.

Pruning to shape trees and pruning of hybrid poplar:

- Pruning and shaping treatments are necessary to obtain quality logs. Double leaders must be cut to maintain straightness, preserve a dominant leader and control the elongation of large branches. For all species, pruning is essential to produce knot-free lumber and peeler logs.
- Pruning rules:
  - prune for the first time around age 4 or 5 when the branches reach 3 cm in diameter, and prune again after 2 or 3 years;
  - prune neither too early nor too late in the season (after the sap begins to rise, from mid-June onward) to ensure good callusing and limit suckering;
  - never prune more than one-third of the total height;
  - prune up to about 6 m;
  - remove low branches that broke under the weight of the snow;
  - follow the usual guidelines for promoting callus formation: make the cut just outside the root collar (swelling) but do not tear the bark or leave a stub;
  - keep pruning tools clean and sharp.

Neglecting plantation follow-up and maintenance greatly increases the likelihood of failure and reduces plantation productivity considerably.

The means and commitment to ensure long-term cultural follow-up are guarantees of success and attainment of the objectives.

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APPENDIX: WILDLAND AFFORESTATION PROJECT SELECTION SHEET

File No.: _____

Preliminary evaluation

Please answer the following three questions:

The area comprises at least one hectare (1 ha) in a single block, which is at least 30 metres wide in the case of a strip of land:

Yes ☐ No ☐

The area was not forested land within the meaning of the Kyoto Protocol after December 31, 1989 (presence of natural or artificial regeneration with the potential to reach a height of 5 metres and tree crown cover of 30% or more):

Yes (it was not forested land) ☐ No (it was forested land) ☐

Does the project involve afforestation within the meaning of the Kyoto Protocol, e.g. the conversion of non-forested land to forested land through planting or seeding?

Yes ☐ No ☐

If you answered 'yes' to the three questions above, the wildland meets the criteria set out in the Kyoto Protocol and you can go on to the questions below.

Forest 2020 program criteria:

The owner is a forest producer or will become one before the program is slated to end:

Yes ☐ No ☐

The site is accessible and the topography allows for the use of the requisite machinery:

Yes ☐ No ☐

The drainage class is between 1 and 4 (rapid to imperfect) the usable soil thickness is at least 30 cm:

Yes ☐ No ☐

Soil texture ranges from fine to coarse (heavy clay and sand are excluded):

Yes ☐ No ☐

If you answered 'no' to any of the above questions (selection criteria), the wildland is not eligible for the Forest 2020 program. If you answered 'yes' to the four questions (criteria), the project is eligible and you may complete the wildland description section below.

Description of the wildland

File No.: _____

Owner

Name: _____

Address of owner (street, town, province, postal code):

_____

_____

Phone: _____ Fax: _____

Email: _____

Forest producer certificate no.: _____

Identification of wildland

Ecological subregion: _____

Location (street, concession, lot(s)): _____

Municipality: _____

Agency: _____

Map (sheet number): _____

Available aerial photos (numbers): _____

Description of wildland

Area available in a single block: _____ ha

Agricultural use ended: Less than 5 years ago ☐ 5 to 10 years ago ☐ More than 10 years ago ☐

Type of wildland: Grassy ☐ Brush ☐ Treed ☐

Main shrub and tree species: _____

_____

Percentage of woody vegetation cover having the potential to reach a height of 5 m:

_____ %

Most common plants observed on the site:
(Note the presence of indicator plants – See Table 1)

Known crop history:

Pasture ☐ Forage crops ☐ Grain ☐ Corn ☐ Other ☐

Herbicides used (if known, names and last year of use): _____

N.B.: Simazine and atrazine can affect poplars.

_____

Topography:

Flat to slightly undulating ☐ Bench ☐

Lower slope ☐ Mid-slope ☐ Upper slope ☐

Slope: Uniform ☐ Variable ☐ Orientation _____

Slope class: 0 to 3% ☐ 4 to 8% ☐ 9 to 15% ☐

Risk of early or late frost (frost pocket): Yes ☐ No ☐

Usable soil depth: _____ cm

Earthworms present: Yes ☐ No ☐

Nature of deposit (e.g. till, gravely sand, clay): _____

Soil texture for the first 30 cm (tactile evaluation in the field):

Fine (clays) ☐ Medium (loams) ☐

Coarse (sandy loam) ☐ Coarse (loamy sand) ☐

Drainage:

Rapid (class 1) ☐ Good (class 2) ☐

Moderate (class 3) ☐ Imperfect (class 4) ☐

Localized need for surface drainage: Yes ☐ No ☐

Site preparation already done (treatment, machinery, date):

Yes ☐ If yes, type of preparation: _____

_____

No ☐ Work to be done: _____

_____

Fertility (apparent): Low ☐ Average ☐ Good ☐

Soil analysis (recommended): Available ☐ To be obtained ☐ Not required ☐

Choice of species (based on Table 2 and the soil analysis):

_____

MAPAQ afforestation authorization:

Obtained ☐ To be obtained ☐ Not required ☐

Anticipated year of planting: _____

Comments: _____

_____

_____

Inspected by: _____

Date of visit: _____

Signature of authorized official: _____

Date : _____

Please return the questionnaire to your regional agency.

notes

notes

Ressources naturelles et Faune
Québec

Natural Resources Canada
Ressources naturelles Canada