



Branching out

from the Canadian Forest Service ■ Laurentian Forestry Centre

Number 35
2007

Does pruning softwoods pay off?

Is pruning softwoods a worthwhile investment? In other words, are the benefits greater than the required outlays? Will every dollar invested in pruning provide a higher return than other available investment options?

The answers to these questions depend on a variety of factors, such as the cost of the operation, the time interval between pruning and final harvest, the productivity of pruned trees, the increase in the market price discounted for pruning and the interest rate selected. A simple calculation tool is now available for simulating the cost-effectiveness of this treatment.

This decision support tool, developed by the Canadian Forest Service of Natural Resources Canada in collaboration with the *Direction de la recherche forestière* of the *ministère*

des Ressources naturelles et de la Faune du Québec, estimates the net present cost of pruning, which is expressed in relation to the small-end diameter of pruned logs and age at final harvest. This cost represents the minimum price at which pruned logs from a stand should be sold in order to recoup the cost of pruning. The minimum price thus estimated depends on the values assigned to the various parameters. It is assumed that 1) pruning does not affect the size of the trees, and 2) timber harvesting and transportation costs are the same whether the trees are pruned or not. The minimum value of

a pruned log, based on the investment made, can then be compared with market prices to determine whether it is realistic to expect the pruned wood to sell at a profit.

The decision model has the following inputs, to which the user assigns values:

Pruning treatment

The model is designed to simulate a pruning treatment for individual trees consisting of one, two or three interventions spread over time. For each intervention, stand age and pruning height must be determined.

| Source | Pruned stems stems/ha | Pruning height ft m | | COSTS | | | | | | | |
|---------------------------------|--------------------------|------------------------|------|-------|---------|-------|------|--------------------|----------------------|-------|-------|
| | | | | TOTAL | | | | Transport (10%) | Branch cutting (90%) | | |
| | | | | \$/ha | \$/tree | \$/ft | \$/m | | \$/tree | \$/ft | \$/m |
| FERIC 2001 | 375 | 10.5 | 3.20 | 540 | 1.44 | 0.14 | 0.45 | 0.144 | 1.30 | 0.123 | 0.038 |
| Projet Charlevoix 2004 | 527 | 9 | 2.74 | 1100 | 2.09 | 0.23 | 0.76 | 0.209 | 1.88 | 0.209 | 0.064 |
| Rivière-du-Loup 2002 (Rexforêt) | 475 | 11 | 3.35 | 1200 | 2.53 | 0.23 | 0.75 | 0.253 | 2.27 | 0.207 | 0.063 |
| Agence Forêts privées Estrie | 334 | 12 | 3.66 | 1100 | 3.29 | 0.27 | 0.90 | 0.329 | 2.96 | 0.247 | 0.075 |

Example of costs of recent pruning treatments.

A healthy forest ■ A strong forest sector ■ Knowledge at your fingertips



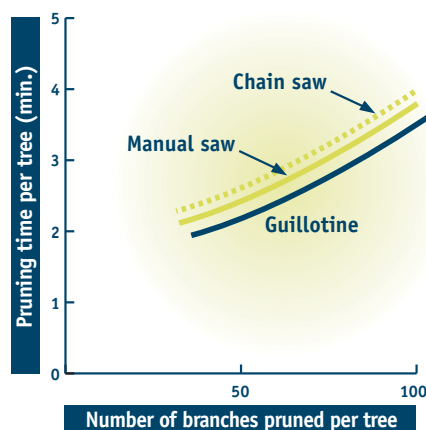
Natural Resources
Canada

Ressources naturelles
Canada

Canada

Pruning cost

The pruning cost is estimated on a per-stem basis. Productivity varies with the species treated, pruning height, the number of branches involved, the walking distance between trees to be pruned, the time it takes to locate them in stands, the types of tools used and the workers' experience.



Graph: M. St-Amour (FERIC)

Mortality rate between pruning and final harvest

A certain proportion of the pruned stems will not make it to the final harvest, but will instead succumb to natural mortality or natural disturbances (e.g., insects or glaze ice), or be eliminated through human-caused disturbances (e.g., injuries sustained during thinning operations) or inadvertent harvesting during thinning operations. Mortality is included in the model to reflect the loss of part of the investment prior to final harvest. Users are



Photo: SCF

required to set the expected mortality rate based on their experience and on data available for the region concerned.

Annual interest rate

What would the net gains be from a pruning treatment compared with a financial investment? Traditionally, forestry planners have looked for an annual return of 3.5–5%, which is a reasonable rate of return for a 20-year period. However, someone could also explore whether pruning is a competitive investment compared with putting money in an RRSP at a rate of 9.5%! Caution must be exercised when performing a financial analysis like this, however, since the results are very sensitive to the interest rate that is selected.

Base price for an unpruned stem

This is the base price (pulpwood or standard lumber) that the model user expects to obtain for every unpruned stem.

Although the calculation tool is designed primarily for even-aged softwood stands, it could also be used for the pruning of hardwood species, but not for pruning carried out to shape trees or to deal with pest problems.

The decision support tool is available on the following Web site:

www.cfs.nrcan.gc.ca/news/525

Detailed information on the model and its use is available at (in French only):

www.mrnf.gouv.qc.ca/elagage/documents/actes-elagage.pdf

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

Jean-Martin Lussier

Natural Resources Canada
Canadian Forest Service
Laurentian Forestry Centre
1055 du P.E.P.S.

P.O. Box 10380, Stn. Sainte-Foy
Québec, Quebec G1V 4C7

Phone: 418-648-7148

Fax: 418-648-5849

E-mail: jlussier@nrcan.gc.ca

Web site: cfs.nrcan.gc.ca