

Branching out

from the Canadian Forest Service ■ Laurentian Forestry Centre

Number 45
2008

What impact does forest biomass harvesting have on soils? Join the research effort!

The crisis in the forest industry, climate change and the growing world demand for energy are all arguments for using forest biomass to generate energy. In light of this, the recovery of logging residues (tree branches, foliage and crowns) appears to be a promising option for reducing fossil fuel use, while also diversifying forest production.

Logging residues nonetheless play a critical role in maintaining soil productivity. That is why it is important to predict the ecological consequences of removing such residues from the forest. Studies conducted in temperate and boreal forests have shown that the removal of this for-



Forest residues pile along the road.
Photo: D. Paré (CFS)



Join the research effort!

Let the CFS know that you are interested in this project. The contact information is printed on the back of this sheet. You can get in touch with the project leader to obtain any information you need and then decide whether you want to include your experimental site or even several sites in the project.

Every plot counts!

est biomass has adverse effects on soils and on tree nutrition and growth.

To obtain a more complete picture, researchers with the Canadian Forest Service (CFS) of Natural Resources Canada have developed a guide that describes the procedure for establishing plots that can be used to monitor the effects of the removal

of forest biomass. This is part of a Canada-wide project involving a long-term study that encompasses a number of ecozones and a range of sites and stands. The guide is intended for all stakeholders, including woodlot owners, who undertake forest biomass harvesting projects, and they are invited to participate actively in the research.

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



Natural Resources
Canada

Ressources naturelles
Canada

Canada

The advantage of using permanent plots is that researchers can return to these sites for a number of years after harvesting to measure the changes in the following ecological parameters:

- the acid/base status of the soil;
- the nutrient reserves of the soil;
- carbon stocks in the soil;
- the growth and foliar nutrition of the stands that become established after logging.

Other parameters can be added as needed, such as biodiversity indicators.

Two types of harvesting will be compared: stem-only harvesting and whole-tree harvesting. In the first case, only the trunks of merchantable trees (treelength logs or bucked logs) will be harvested and the logging



On-site forest residues chipping (Dégelis, Quebec).
Photo: E. Thiffault (CFS)

residues will be left on the site. In whole-tree harvesting, all the tree biomass is removed from the site. The operations must be described in as much detail as possible, including the machinery used.

The guide clearly describes the procedure for siting and describing plots, along with the sampling method to be



Forest residues on logging site (Dégelis, Quebec).
Photo: E. Thiffault (CFS)

Steps involved in establishing plots and carrying out sampling

Step	Description
1	Identification of the sites
2	Establishment of the main plots
3	Inventory of logging residues
4	Inventory of surficial substrates
5	Inventory of non-merchantable vegetation
6	Inventory of stumps
7	Inventory of merchantable vegetation and snags
8	Soil sampling

used for the logging residues, vegetation and soils (see table), as well as the procedure for forwarding the information to the researchers.

Although ideally these steps should be carried out when the plots are established or soon thereafter, steps 1 and 2 are the only ones that need to be completed to include a site in the research project.

The more sampling plots we have, the more precise information we will obtain on the environmental effects of biomass harvesting and the more precise resource sustainability indicators we will have.

FOR MORE INFORMATION, PLEASE CONTACT:

David Paré

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

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

Phone: 418-648-7598

Fax: 418-648-5849

david.pare@nrca.gc.ca

Web site: cfs.nrcan.gc.ca/regions/lfc

