Biotechnology

A New Tool for Forest Management

What is Biotechnology?

Biotechnology is the use of genetic information and biological techniques to create new products and services, like better medicines or hardier crops. Organisms like plants, fungi and bacteria are used in this process.

Canada is currently exploring biotechnology as a way to help achieve sustainable forest management.

Forestry and Biotechnology

In the forestry sector, biotechnology can be used to reduce pressures on natural forests by creating:

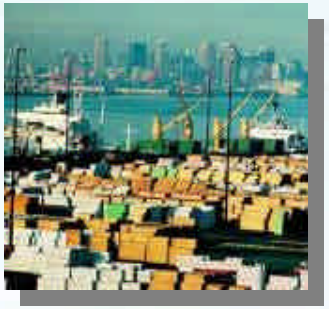
- innovative insect control agents and products;
- methods for detecting and diagnosing pathogens; and
- pest-resistant trees.

Biotechnology in Canada

Investing in biotechnology creates knowledge that can be used to find simpler forestry solutions. This encourages innovation and improves our competitiveness within the forestry sector.

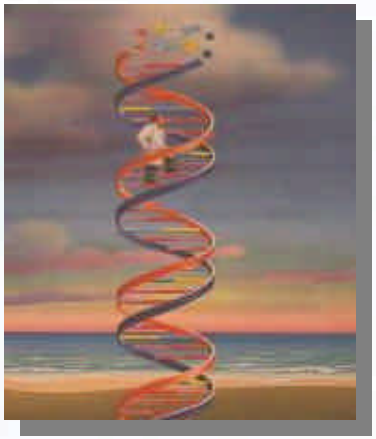
Canada is currently exploring biotechnology as a means of:

- improving the productivity of managed forests; and
- maintaining its share of the world market of wood and wood products.



Other Initiatives

Canadian Biotechnology Strategy has been developed to ensure the global competitiveness of Canada's forestry sector.



The Strategy guides federal activities to ensure that social issues are considered and that human, wildlife and environmental health are not at risk.

The Canadian Forest Service

The Canadian Forest Service (CFS) is creating valuable knowledge and using biotechnology applications for better forest regeneration and protection methods, while considering the environment.

Its Pacific, Northern, Great Lakes, Laurentian and Atlantic Forestry Centres are currently conducting biotechnology research and are integrated nationwide through research networks.

Fast Facts

- Forest biotechnology-derived products are regulated under several acts to make sure they are safe and effective. The *Seeds Act*, for example, governs the use of genetically modified trees. Two agencies, the Canadian Food and Inspection Agency and the Pest Management Regulatory Agency, overlook gene traits before they are introduced in the environment and decide if they are safe for humans and the environment.

- Genetically Modified Trees are being researched in Canada, in labs, greenhouses and fields. But they still have to meet regulations of the Canadian Food Inspection Agency!

Fast Facts

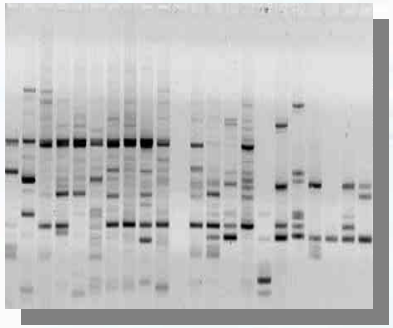
- "Transgenic", "genetically modified" and "genetically engineered" are terms used to describe a tree that has been changed by adding or removing a specific genes.

- 75% of Canadians think using a bacterial and viral pest control product to fight insects that harm trees is a good idea, while 78% support the use of genetically modified, faster-growth trees in the forest.

Fast Facts

- Biotechnology is being used to fight tree theft! Thieves steal between $75 and $150 million worth of timber each year in British Columbia, but putting them behind bars is difficult unless they are caught in the act.

- Research scientists at the CFS Pacific Forestry Centre are on the case, working on a way to match the DNA in suspect logs with the DNA in leftover stumps. Now that's proof!



Fast Facts

- Did you know that scientists at the CFS Laurentian and Atlantic Forestry Centre can make as many trees as they want from the tissue of just one seed? The technique is called somatic embryogenesis – which is a method of cloning – and it's very cool! So cool that the embryogenic tissue is frozen at –196 °C and stored for years with no side effects.

A Look Ahead

The use of biotechnology in the forestry sector is a growing area of interest. Canada is currently recognized as a world leader in the development and application of biotechnology.

As our efforts continue, Canada's knowledge and expertise in forest biotechnology will continue to be a valuable resource – both domestically and to other countries working toward sustainable forest management.

Contact Information

To learn more about forest biotechnology initiatives within the Canadian Forest Service, contact:

Dr. Ariane Plourde
Research Director- Forest Biology
Canadian Forest Service / Natural Resources Canada
1055 P.E.P.S. Street, P.O. Box 3800
Ste-Foy, G1V 4C7
Telephone: 648-7616(418)
Fax: 648-6956(418)
E-mail: Ariane.Plourde@nrcan.gc.ca

Website:
http://www.nrcan-rncan.gc.ca/cfs-scf/science/resrch/biotechnology_e.html