



Recovering the economic value of trees infested with the beetle

Chips from mountain pine beetle-killed wood are drier and darker, which results in a weaker, darker newsprint.

Alberta Newsprint Company (ANC) and the Alberta Research Council (ARC) have worked together for three years to develop a detection and response system for dry, blue-stained chips.

ARC has developed a series of five sensors that detect changes in chip quality.

Then to make the beetle-killed wood usable, ARC tested different refining and bleaching processes to see what processes worked best for different chip qualities.

This information has led the team to the next phase - modifying shoe press technology to enhance the strength of newsprint made with beetle-killed wood.

The result: technology that allows paper mills to maintain production levels and product quality throughout the beetle infestation.

“Our customers are extremely quality conscious. If ANC can’t provide quality newsprint, they will go elsewhere.”

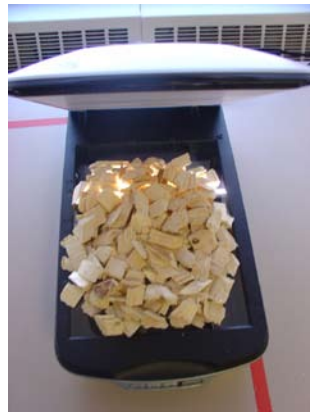


ANC will not compromise quality. Our goal is to mitigate the effects of the beetle so it is transparent to our customers. I called ARC for help.”

Gary Smith, Alberta Newsprint Company



Normal chips (top) and beetle-killed chips (bottom) are fed into the pulp and paper plant.



A series of five sensors detect changes in chip quality.



Then the operator uses the refining and bleaching processes developed by ARC so that the beetle-killed chips do not affect newsprint quality.

How does this technology help?

Though the Alberta Newsprint Company (ANC) is the location of the test site, the impact of these technologies will be felt throughout the industry.

A key step in the project is to share the research findings with the pulp and paper industry so that these technologies can be implemented at other pulp mills in North America.

Also, the wood chips used for making newsprint currently come from the processing of spruce and pine logs in regional sawmills. Mixing into this fibre supply the chips from lodgepole pine trees killed by the beetle means that a decreased amount of healthy trees need to be used and the healthy spruce trees can be conserved.



How Alberta is tackling the effects of the mountain pine beetle

The goal of this project is to maximize the use of mountain pine beetle killed wood, as well as susceptible green pine, to help mitigate the spread of the beetle and its effects.

Key elements of this research project:

1. **Pilot plant design**
Test and evaluate various wood chips samples and blends, then use those findings to modify the shoe press so it best mitigates the effects of beetle-killed wood.
2. **Pilot plant installation**
3. **Process development applied research**
Run a series of trials on Alberta Newsprint Company's paper machine. Using information from the sensors and product testing, determine what equipment and process modifications are needed for various proportions of beetle-killed wood.
4. **Development of operating manuals**
Document results into operating manuals that show the best methods to use for beetle-killed wood using modified equipment
5. **Technology transfer**
Share the results of from the pilot plant testing with the pulp and paper industry in Canada.

Alberta-made sensors are key to the solution

Beetle-killed wood is poorer in quality. A series of sensors developed by the Alberta Research Council measure different aspects of chip quality.

Mill operators can then use that information to make adjustments to the paper making process to ensure product quality is maintained.

The five sensors are:

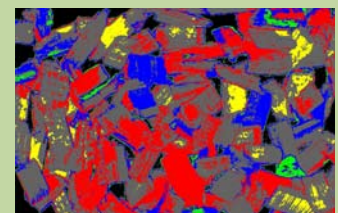
1. Laboratory bluestain analyzer
2. Wood chip bluestain analyzer
3. GC species analyzer
4. On-line foam analyzer
5. UV analyzer for dissolved organics



The on-line system uses algorithms to quantify bluestain and brightness



Wood chip image



The sensor's chip quality map