

Beetle wood chips palatable for pulp

FORESTRY INNOVATION INVESTMENT LTD.

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Kraft pulp mills can adjust their operations to deal with mountain pine beetle-killed wood chips, researchers say.

The beetle infestation in British Columbia is forcing mills to process large volumes of dead and dying lodgepole pine. Unfortunately, bluestain, checking, lower moisture content and altered chemical properties may complicate pulping processes and lower the value of fibre sold for pulp.

In a study initiated by Forestry Innovation Investment Ltd., researchers from the University of British Columbia and the Canfor Research and Development Centre looked at the implications of using dead wood in the production of pulp and paper.

The report provides some understanding of the relationship between chemical pulp processing, quality and time since infestation. Potential also exists for value-added product development as the pulp properties of the unique furnish produced by infested timber are explored.

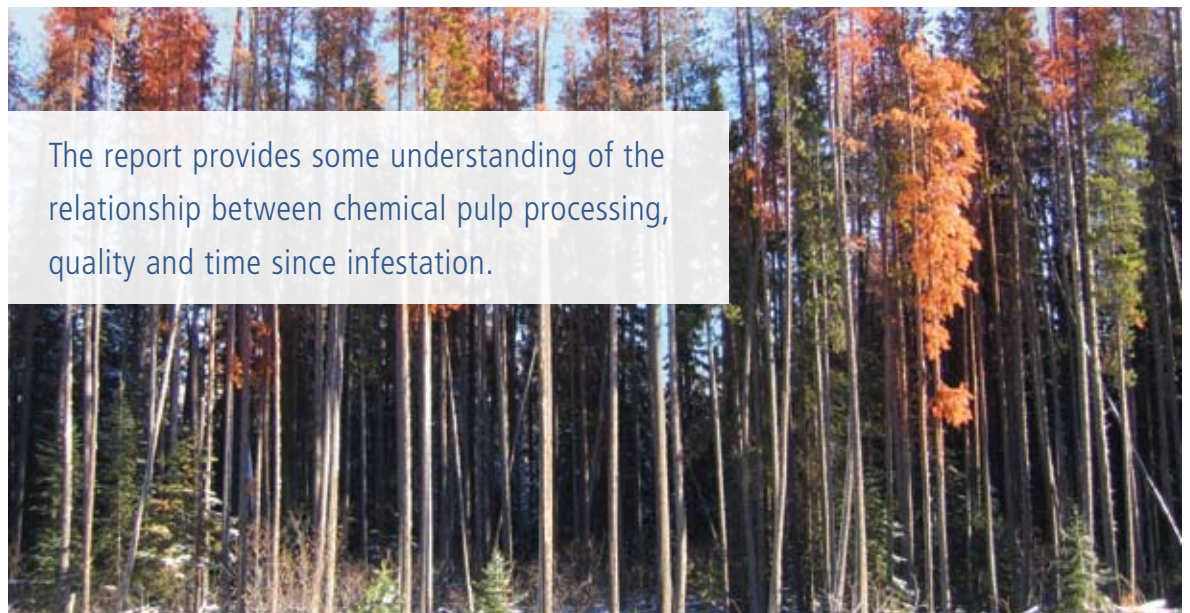


For the project, researchers chose trees killed three and five years previously from the Vanderhoof area. Four truckloads were delivered to the Canfor-Plateau sawmill, where the logs were sawn into dimensional lumber and chips were collected for the laboratory pulping tests. All tests were compared to a normal spruce-pine-fir (SPF) benchmark.

Chip screening was done on a Linden Chip Classifier according to standard mill methods. Mixtures of 70% 16 mm round and 30% 7 mm round chips were prepared for the pulping study and stored in a cooler at 5°C.

The Vanderhoof benchmark, three-year and five-year chips underwent kraft pulping to a kappa target of 30 ± 2 in a batch digester. Kappa is a measure of delignification.

Chipping results showed that the beetle-attacked wood had lower amounts of the 16 mm and 7 mm chip fractions compared to a typical SPF batch from the same mill, and the five-year wood had 80% more fines than the three-year dead wood.



There was little difference in kappa, yield and liquor consumption between the three- and five-year wood, and the same was true for tear strength, burst, and tensile strength.

The dead wood pulped to a higher yield than



the benchmark sample. Generally, pulping to a higher yield is desirable, provided strength or brightness isn't impacted.

FOR THE FULL REPORT, GO TO WWW.BCFII.CA/MPB/ AND DOWNLOAD THE REPORT "MPB 2006-12: QUALITY OF MOUNTAIN PINE BEETLE INFESTED FIBRE: IMPLICATIONS ON THE PRODUCTION OF PULP AND PAPER PRODUCTS".

Overall strength of the dead wood pulps was lower than that of the benchmark sample by about 3%. Also, there appeared to be an improved bleaching response in dead wood pulp compared to the benchmark, but at the cost of slightly lower yield.

The dead wood pulps bleached to higher final brightness than the benchmark sample, with the three-year and five-year material being 5% and 9% higher, respectively.

Certain physical and strength properties such as coarseness and porosity play a major role in the quality of pulp. For some operations, coarser pulp may be desirable, but if the end product is fine paper, then less coarse pulp is desirable.

This project shows that the beetle-killed fibre is less coarse than the benchmark sample. Coarseness of the three-year and five-year pulp is lower by 8% and 12%, respectively.

The fibre length of the dead wood is lower than that of the benchmark sample, by 7% for the three-year and 3% for the five-year material. Tests also suggest that dead wood pulps form a less porous sheet in comparison to the benchmark sample.



As the pulping and bleaching data are influenced by many factors including the geo-climatic conditions of the sampling sites and number of test specimens, the information showing trends of yield and fibre properties is considered preliminary. Additional sampling and testing will be necessary.

Forestry Innovation Investment Ltd. is a British Columbia government corporation investing in initiatives to help market BC forest products, and promote our sustainable forest practices to the world. FII's Mountain Pine Beetle Program supports government's Mountain Pine Beetle Action Plan and its objective to maximize the economic value of mountain pine beetle wood. FII does this through marketing activities and research into new products and manufacturing processes for mountain pine beetle wood.

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