

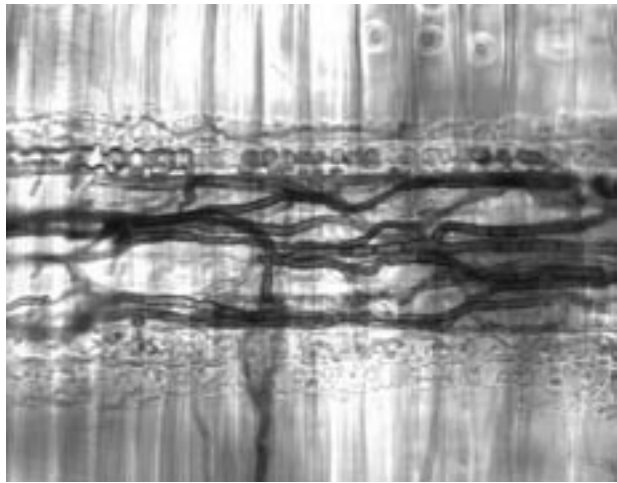


Maintaining quality standards with blue chips

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The current mountain pine beetle (MPB) infestation is creating significant challenges for the pulp and paper industry in both British Columbia

and Alberta. To use the MPB-killed trees, the government has increased the allowable annual cut (AAC) in various districts in British Columbia. Increasing the harvest of dead lodgepole pine throughout the province has a direct effect on the wood chip supply destined



Paprican—EvaluTree

Light micrograph of a radial section of beetle-infested lodgepole pine sapwood. The pigmented hyphae of the sapstain fungus associated with beetle attack are clearly visible.

for pulp and paper manufacturing facilities. To ensure that current and future markets for pulp products are not disrupted, it is important that manufacturing facilities understand the impacts of MPB on wood chip quality.


Approximately 40% of all the wood fibre harvested in British Columbia is processed into residual chips, the furnish for pulp and paper making. In British Columbia's interior, the majority of this fibre is from spruce, pine, and fir (SPF) trees. Green SPF wood chips produce the world's premier reinforcing pulp because of their intrinsic brightness and fibre-strength properties.

Of the three SPF species, lodgepole pine is the least desirable because it has the lowest fibre strength. As the level of lodgepole pine harvested in the province has increased, so has the ratio of lodgepole pine in the SPF wood, which could affect the strength of the pulp product. Problems associated with infested wood affect the manufacturing process at all stages of attack. Early (green) attack pine exhibits 50–100% more resin, a result of the tree trying to "pitch out" the beetle. Increased resin affects effluent treatment systems, kraft tall oil production, mechanical paper machine efficiency, and pitch-dirt content.

Another effect on chip quality comes as the blue-stain fungus transported by the beetle enters the sapwood, which is the portion of the log that is predominantly converted to chips. This has two major consequences. First, storage of chips from beetle-killed, blue-stained trees may inoculate clean chips in a chip pile. Second, a greater amount of chemical treatment is required to brighten pulp produced from blue-stained chips to attain quality standards for mechanical pulp grades. In addition to increased production costs, it is now impossible in some cases to attain certain brightness grades. Finally, as the tree progresses to grey stage, the low moisture content of the wood affects pulp quality detrimentally.

To address these issues, the Pulp and Paper Research Institute of Canada (Paprican) is conducting a research program that has been developed after extensive industry consultations and with significant funding contributions from the Canadian Forest Service Mountain Pine Beetle Initiative. Outcomes from this research have implications across the entire forest products value chain. Projects in the following areas are underway: assessment of increased pine in SPF pulps, shelf-life effects on wood quality related to Biogeoclimatic Ecosystem Classification (BEC), whole log chipping economics, development of a sensor for dry and blue-stained wood, effects of changing extractives levels in pulping and papermaking, overcoming blue stain for mechanical paper grades, and dry-wood utilization in pulp and papermaking.

Results from these trials will enable British Columbia and Alberta pulping operations to develop cost-effective treatment and utilization options to maintain quality and market share during the current extremely demanding market conditions.

Preliminary results are available from Paprican, and final reports will be available later in 2006. Paprican has been presenting the findings at various conferences, and will continue to provide updated information as the studies progress or are completed. 

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