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A series of recent industry seminars had a strong focus on trench warfare tactics and options on how best to handle beetle-killed wood in the bush and accommodating its characteristics in the sawmill, dry kiln, planer and marketplace.

By Jim Stirling

The war against the mountain pine beetle has descended into the trenches. It's one of the few places left where it can be fought, and some lost ground recovered.

Control and curtailment policies have failed. Licensees have options about where to clearcut pine stands. Some are concentrating on heavily pine dominant stands. Leaving alone mixed species protects the understory and provides foundation for a new mid-term fibre supply.

But otherwise, dealing with mountain pine beetle-killed wood has become an exercise in applying the details of mitigation strategies. The goal is to make the best of what is increasingly a bad lot. The challenge is compounded by the external financial, market and political realities shaping the forest industry.

A series of recent seminars focused on some trench warfare tactics and options on how best to handle beetle killedwood in the bush and accommodating its characteristics in the sawmill, dry kiln, planer and marketplace. The seminars were presented by FPInnovations, a triumvirate of the expertise and research capabilities of Forintek, FERIC and pulp and paper research outfit Paprican. Subtitled the "Mountain Pine Beetle Encounter," they were designed for operational personnel charged with producing lumber from beetle-killed logs. These people must adapt to a resource profile that's changing at an unprecedented rate and scale. The seminars began in Grande Prairie, Alberta and moved to Prince George, then Quesnel, and concluded in Summerland, BC.

The latest update from the BC Ministry of Forests & Range estimates a staggering 530 million cubic metres of standing red and grey attack pine in BC. The problem continues to worsen.

A speaker at a recent industry seminar on beetle wood recommended more communication between loggers and mills, to learn what's involved from the other guys' perspectives and identify where better log quality can be attained, in the mill or in the bush.

Bjorn Andersson summarized the harvesting issues in mountain pine beetle stands. He's senior researcher (harvesting) with FPInnovations' FERIC Division. One of those issues surrounds forest roads: it's difficult if not impossible to plan and predevelop roads ahead of harvesting beetle stands. A result is poorer quality roads which impacts delivery time and costs to the mill. Accelerated harvest levels on more roads highlights safety issues, says Andersson. Raised water levels can create soil disturbance and force a juggling of summer/winter harvesting balances.

And then, of course, there's lower log quality with more defects from red attack wood. Stem breakage in beetle wood is more frequent from feller bunching to skidders decking wood. Using a log loader to deck helps to reduce some of the breakage risk—but also adds up to $2 a cubic metre in extra machine costs. Andersson says the biggest challenge for logging companies is processor productivity. It's difficult to assess the amount of checking in a log as it zips through a processing head at five metres a second, he observes.

Costs per cubic metre are much higher than in green wood as the measuring, bucking and sorting takes place at this stage. "The skills of the processor operator are very important to getting good log quality," notes Andersson.

Increased numbers of shorter logs create log loading phase issues and in getting more weight with the drier wood on logging trucks.

The amount of waste and debris left in the bush with beetle wood processing is staggering. Andersson cites a recent study indicating that 20 per cent to 50 per cent of the original volume is wasted. Alternate uses need to be found, he says. What harvesting the beetle stands does is increase wood costs and waste volumes and lowers productivity.

Andersson recommends more communication between loggers and mills to learn what's involved from the other guys' perspectives. And, he adds, identifying where better log quality can be attained, in the mill or in the bush. Andersson also suggests establishing a realistic quality control program with achievable goals and revisiting it as harvesting moves into older beetle stands. And, he concludes, try to keep inventories of beetle wood to a minimum.

John Taylor from FPInnovations Forintek's sawmilling group, outlined to seminar attendees some of the challenges of making lumber from mountain pine beetle logs. These include: the dry logs are more difficult to debark; production is lost when lumber from checked logs break and jam machines; saws and knives wear more, requiring unscheduled changes; reduced lumber recovery and grade loss due to checks and stain; lower chip quality with more fines and bark content.

Cracking and checking in beetle logs is a prime reason for lower financial returns from them, says Taylor. And once the beetle kills a tree the moisture content drops and the checking increases. The type, extent and length of checking has clear impacts on lumber recovery and grades. Taylor says Forintek's Optitek sawmill simulation software has been enhanced to include the effects of checks and stain.

There are other emerging technologies to track cracks and checks in practice, continues Taylor. These include the use of lasers, cameras and x-ray scanners. Taylor also delivered a session on sawing beetle-killed pine and the issues surrounding more efficient processing. Forintek surveyed mills on issues of interest and followed up with project work in the indicated areas. The project investigated: saw designs and performance; misalignment; stainless versus standard circular saws; cutting power; circular saw tipping and band saw tipping.

Among the conclusions from the saw tests was that 30-tooth saws performed best for power, feed speed and accuracy. Taylor notes saws should be run with minimum side clearances. Thinner saws (0.70 plate) and higher arbour speeds produced positive results in the project. Taylor notes that saw misalignment is—according to the tests—likely to cause more problems with wedging than deviation. And, as an aside, he says not to be too quick to blame the saws for problems. They won't stand up well if the whole line is even slightly out of alignment.

Taylor recommends an in-house mill team be set up to examine machine alignments. It will take time, he acknowledges. But when you get it right, it will give you way less trouble and way more production, he says. Taylor adds the cemet (ceramic and metal) tips represent a promising new material for sawing beetle-killed wood.

Luiz Oliveira of Forintek pointed out some of the issues involved with drying and heat treating mountain pine beetle wood. The good news is dry mountain pine lumber has an initial moisture content around 20 per cent to 25 per cent which translates into significantly shorter drying times than green SPF. Overdrying, however, can cause warp, grade loss and probably shrinkage, says Oliveira, though he has no empirical data to back up the latter supposition.

A complicating factor is federal government imposed generic heat treatment schedules which are subject to inspection and must be met. Forintek has developed a heat treatment method to help ensure kiln samples meet federal standards. This includes taking two sample loads of a very dry sort and establishing and then positioning the packages in the coldest spot in the kiln. Wood core sensors measure the sample temperatures. What the data produces is a mill-specific heat treatment schedule appendix for quality control manuals and compliance with regulations.