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DEBARKING ROTTEN CEDAR LOG ENDS, SMALL-DIAMETER STEMS AND BARKY SAWMILL SLABS USING THE DEAL PROCESSOR

Introduction

British Columbia pulp mills are looking for alternative sources of wood fibre to supplement their conventional chip supplies. Two potential alternative sources of fibre are wood waste generated when logs are upgraded by bucking, and undersized stems or portions of stems that are not recovered at roadside. A third potential source of chippable material is the barky slabs cut from the outer surfaces of sawlogs by small sawmills scattered throughout British Columbia that can not afford debarks. In the past, most of the waste fibre from these three sources was burned. Today, concerns with air quality throughout the province, have reduced or eliminated burning and this waste fibre could become an alternative source of wood chips for pulp mills. However, if these sources are to be utilized for chips, a means must be found to remove the bark to acceptable levels.

The Deal Processor, was introduced to the Western Canadian forest industry by DJP Contracting, Peace River, primarily as a debris separator and debarker for logyard debris and wood waste. However, the processor has the potential to upgrade wood waste from logyards, roadside log piles and sawmill slab piles. In February of 1995, the Forest Engineering Research Institute of Canada (FERIC) observed the Deal Processor operating at the Evans Products Co. Ltd's. Donald Sawmill, located near Golden, British Columbia. FERIC monitored the performance of the Deal Processor as it handled low-grade cedar log ends, small-diameter tops and pieces and barky sawmill slabs. A Bruks chipper was set up immediately after the Deal Processor to chip the debarked wood fibre.

Description

The Deal Processor (Figure 1) was originally designed as a debris separator and debarker based on a scalping screen design. The processor features four roller shafts mounted horizontally along the bottom and up one side of the processing bin. Each roller shaft has a series of ablator discs mounted at 20cm spacing along its length. The four ablator roller shafts are hydraulically powered.

The material the Deal Processor handled came from three sources. The low-grade cedar butts came mainly from the bottom portion of stems that had been longbutted to remove heart rot. These rotten cedar butts could not be



Figure 1. Deal Processor at the Donald log yard.

debarked conventionally because they would shatter during the process. The small-diameter tops were trucked from Crestbrook Forest Industries' reload logyard at Parson, British Columbia. At this yard, tree-length lodgepole pine and spruce stems were processed into sawlog lengths suitable for rail transport to Crestbrook's sawmill in Canal Flats. One gravel truck load of frozen tops averaging 10cm butt diameter and weighing about 3 800 kg, was hauled to the Deal Processor from the reload log yard. The barky sawmill slabs were obtained from a small sawmill near Golden, British Columbia. At this mill, Douglas-fir, lodgepole pine and white spruce logs had been cut into railroad ties, studs, and fencing. Some of the pine and spruce logs were from dry, mountain pine beetle-killed stems. One gravel truck load of slabs, weighing about 2 500 kg, was hauled to the Deal Processor.

Study Methods And Results

The Deal Processor was brought to Golden to process rotten, Cedar long butts into chips for the pulp mill at Castlegar. FERIC collected samples from the chipper outfeed to characterise these chips.

A small portion of the small-diameter tops and sawmill slabs were fed directly into the Bruks chipper, and chip samples were taken to determine the characteristics of the furnish if debarking was not undertaken. The tops were

Table 1. Summary of chip analysis.

Description	Size distribution				Bark Content ^d (%)
	Oversize ^a (%)	Accept ^b (%)	Pins & Fines ^c (%)	Total (%)	
Small-diameter tops					
undebarked	0	87.6	12.4	100.0	8.6
debarked	1.5	87.3	11.2	100.0	0.8
Sawmills slabs					
undebarked	7.0	83.8	9.2	100.0	11.7
debarked	9.4	83.9	6.7	100.0	4.2
Cedar sections					
debarked	0.9	90.0	9.1	100.0	2.7

^a Chip diameters greater than 2.8 cm, Williams screen.

^b Chip diameters between 0.94 cm to 2.1 cm, Williams screen.

^c Chip diameters less than 0.46cm, Williams screen.

^d Based on a wet weight basis.

loaded into the Deal Processor in two batches and left in the processing bin for about 5 minutes. When the discharge gate was raised, the debarked tops spilled onto the outfeed conveyor and into the Bruks chipper. The sawmill slabs were also loaded into the processor in two batches, and each batch was left in the processor for about 10 minutes. Chip samples were taken randomly from the chip pile produced from each furnish. Chips were screened using a Williams Screen to determine their size distribution, and analyzed to determine bark content (Table 1).

The Deal Processor reduced the bark content of the wood fibre processed. The slabs were not as well debarked as the other furnishes, probably because the slabs did not tumble around sufficiently in the processing bin. The slabs were also very dry, making the bark harder to remove. Mixing the slabs with round stems may improve debarking. The amount of accept chips from sources other than the cedar long butts may have been reduced because the knife angle on the drum chipper was set to chip dry cedar.

The cedar bark was successfully removed by the Deal Processor because the ablators were able to cut the bark into short strands. The short strands fell through the processor without twisting around the discs. Although the bark content in the sample FERIC collected was higher than expected, Evans Products staff indicated that the bark content was averaging 1.5% over the longer term, and when the chips were mixed with chips from the sawmill, they easily met chip specifications at the Castlegar pulp mill of less than 1% bark content. The bark content could have been further reduced by leaving the cedar logs in the processor for a longer period of time.

Conclusions

The Deal Processor successfully debarked frozen, small-diameter tops of lodgepole pine and white spruce, decadent western red cedar long butts and dry sawmill slabs. Al-

though this trial only monitored the processing of a small volume of wood fibre from alternative sources, the trial did demonstrate that supplemental chip furnishes could be obtained from this type of fibre.

Information

The information contained in this report is based on limited field observations and is published solely to disseminate information to FERIC members. It is not intended as an endorsement or approval by FERIC of any product or service to the exclusion of others that may be suitable. More information may be obtained from:

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