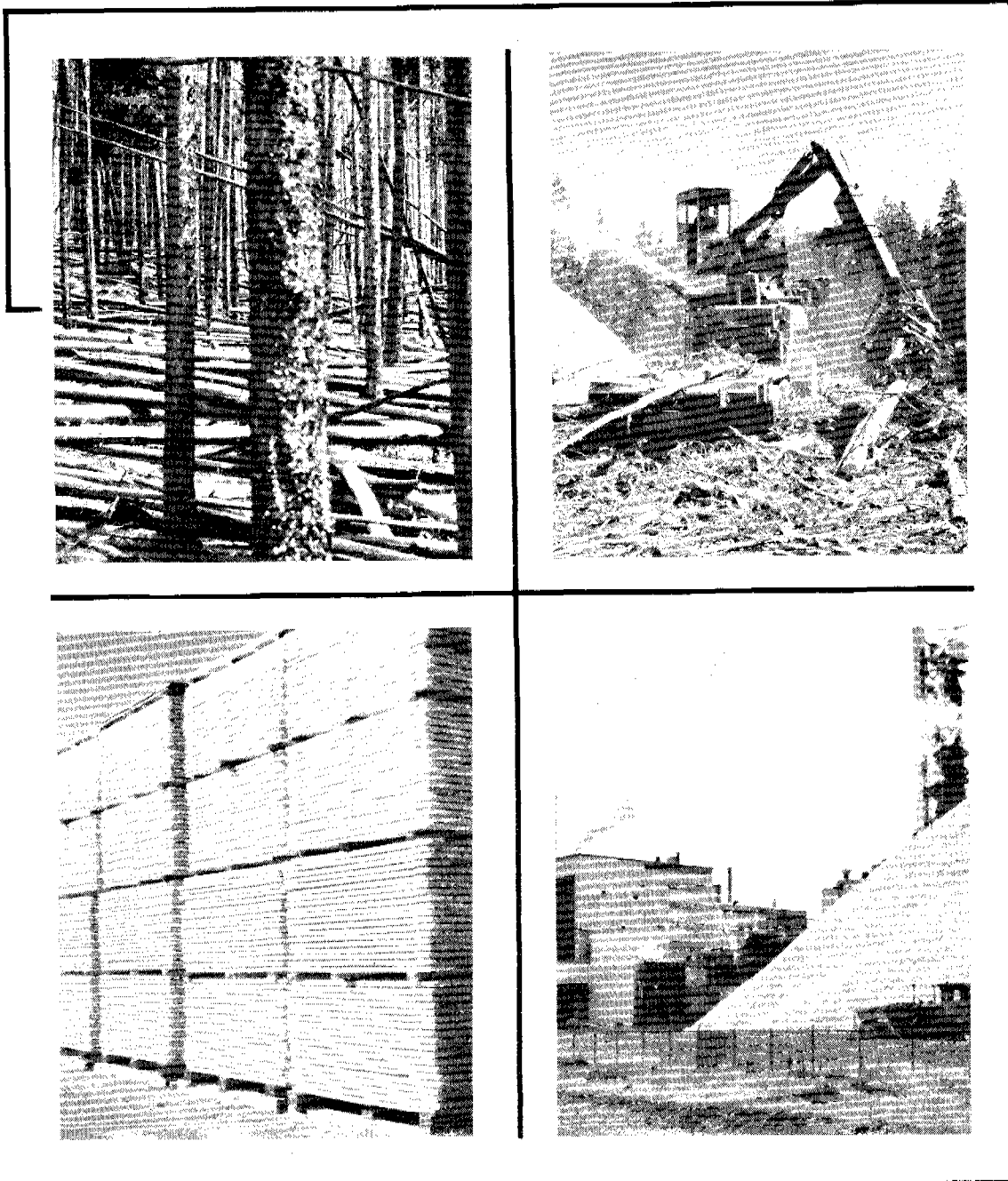


HARVESTING AND UTILIZATION OPPORTUNITIES FOR FOREST RESIDUES in the northern rocky mountains



Symposium Proceedings Nov. 28-30, 1979, Missoula, Mont.

USDA Forest Service General Technical Report INT-110
Intermountain Forest and Range Experiment Station
U.S. Department of Agriculture, Forest Service

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General Technical Report INT-110
March 1981

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Sponsored by:

Intermountain Forest and
Range Experiment Station,
Forest Service, USDA

Bureau of Business and
Economic Research,
University of Montana

Forest Products Research Society
Inland Empire Section

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UTILIZING RESIDUE MATERIAL IN PULPING

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ABSTRACT

The pulp raw material shortage in 1973 and 1974 provided incentives for using whole tree chips at a number of pulp mills in the United States. Since 1974 pulp raw materials supplies have returned to more acceptable levels. As a result, whole tree chips are being used only on a limited basis. However, energy shortages during recent years have provided incentives for the utilization of whole tree chips. Currently, projects are underway in Montana, Idaho and Washington which will increase the demand for waste fuel.

KEYWORDS: residue utilization, pulping

The pulp raw material shortage in 1973 and 1974 provided incentives for using whole tree chips for papermaking at a number of pulp mills in the United States, particularly in the South. During 1973 and 1974, the Missoula pulp and paper mill manufactured chips from dead, dying, down, diseased and defective (5D) roundwood but did not utilize whole tree chips. Since 1974 pulp raw material supplies have returned to more acceptable levels. As a result, whole tree chips are being used only on a limited basis in some parts of the country.

With the 1973-74 experience for justification, the industry, along with land management agencies, educators and equipment suppliers, have defined problems associated with the use of whole tree chips, developed solutions to many of these problems, and continued to use whole tree chips in pulp and papermaking on a limited basis.

Due to continued strength in export requirements for chips and paper demand, coupled with a poor lumber market, we are again into a fiber supply shortage for pulp and papermaking. Therefore, it is reasonable to assume that substantial quantities of whole tree chips will again be used during the next two years by pulp and papermakers throughout the United States.

Benefits from whole tree chips include increased fiber utilization, increased landowner acceptance of harvesting, reduction of site preparation costs, and reduced hazard reduction costs and disturbance to top soil.

Problems in pulp and paper manufacture with whole tree chips include abnormal wear on mill processing equipment from sand and grit, rapid deterioration of whole tree chips in storage, increased fire hazard in chip piles, increased calcium scaling in digestors and evaporators, increased cooking time and alkali consumption, increased bleach consumption, digester feeding problems, and low chip yields.

Although the list of problems is long, considerable progress has been made in solving these problems. Processes which have been developed for upgrading whole tree chips include bark separation, chip screening and washing systems, Morbark^{1/} dual-spout chipper, Morbark class "A" fiber system, and whole tree forwarding to eliminate impacted grit.

With expansion of Champion International's Missoula pulp and paper mill, we are rapidly approaching a shortage of sawmill residuals in the inland area.

Our expansion alone increases the demand for chips by 270 thousand bone dry units (MBDUs) or 293 thousand metric tons per year (22,000 truckloads), fines by 145 MBDUs (157 thousand metric ton) per year (12,000 truckloads) (fines include sawdust, shavings and chip screenings), and hogfuel by 220 thousand units per year (484 thousand cubic meters, or 16,000 truckloads).

First, let's discuss chips. Very few opportunities exist for increasing the total sawmill residual chip supply. We will take advantage of chip surplus situations by purchasing sawmill residual on short-term contracts; however, when chips are in short supply, we will use pulp logs as backup supply for our chip needs. We believe that pulp logs from our fee lands and from stumpage sales purchased from the USDA Forest Service will fill our needs and, therefore, do not anticipate creating a market for pulp logs.

We also believe that an adequate supply of 5D logs on forested lands exists within our operating circle to fill our expanded needs and, therefore, are not installing the necessary processing equipment for upgrading whole tree chips for use in the Missoula pulp mill.

In addition to chips, we use fine sawmill residuals for pulp and paper furnish. Unlike chips, many opportunities still exist for increasing the utilization of fine residuals. Fine residuals include sawdust, shavings, screenings and any other clean wood particles too small in size to meet chip specifications. Champion International's expansion was broken into two phases. Phase I came on line in May of 1978, increasing our use of fine residuals from 30 MBDUs (over 32 thousand metric tons) per year to our current usage of approximately 80 MBDUs (86 thousand metric tons) per year. Phase II of the expansion included the new paper machine. Increased washing and other related equipment are necessary to supply the new paper machine with pulp. After the completion of Phase II, we will be using 175 MBDUs (190 thousand metric tons) of fine residuals per year, more than double our current usage. Our projections indicate that this expansion will utilize most of the remaining fine residuals available from sawmill and plywood plants in Montana.

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The production of energy from wood fiber holds the greatest promise for utilization of whole tree chips in the Intermountain Region. Currently projects have been announced in Montana, northern Idaho and eastern Washington which will increase the demand of wood fiber for fuel by 1.3 million tons (1.2 thousand cubic meters) per year.

Champion's Phase II includes the installation of a new hogfuel boiler which increases Champion's Missoula hogfuel needs from 180 thousand (396 thousand cubic meters) units per year to 400 thousand (880 thousand cubic meters) units per year. Champion currently burns hogfuel at the pulp and paper mill, the Missoula sawmill, and Bonner plywood plant and sawmill.

In addition to our increased needs, Washington Water and Power Company has decided to proceed with development of a 40,000 kilowatt, \$46.7 million steam electric generating plant fired by hogfuel. Newspaper reports say that this plant could be operating near Kettle Falls, Washington by mid-1982. The project is subject to procurement of fuel contracts and state licensing. This plant is estimated to require about 500 thousand tons, (453 thousand metric tons or 278 thousand units) of hogfuel annually. This is the first of possibly five such plants to be located throughout northern Idaho, eastern Washington, and northwestern Montana according to various news reports.

In addition, Potlatch plans to complete installation of a new hogfuel boiler by 1981.

Most of this increased requirement will be supplied by sawmills and plywood plants; however, current economics indicate that whole tree chips from thinning residuals, log yard cleanup, and road right-of-way clearing slash will compete for a limited amount of this supply. Due to some rather encouraging results from trial chipping runs on thinning residuals, Champion plans to use a limited volume of whole tree chips as furnish for their new waste fuel boiler at Missoula.

In summary, whole tree chips have been and are currently being used for the production of pulp and paper. Locally the increased demand for new energy sources will result in the utilization of whole tree chips by Champion's pulp and paper mill.