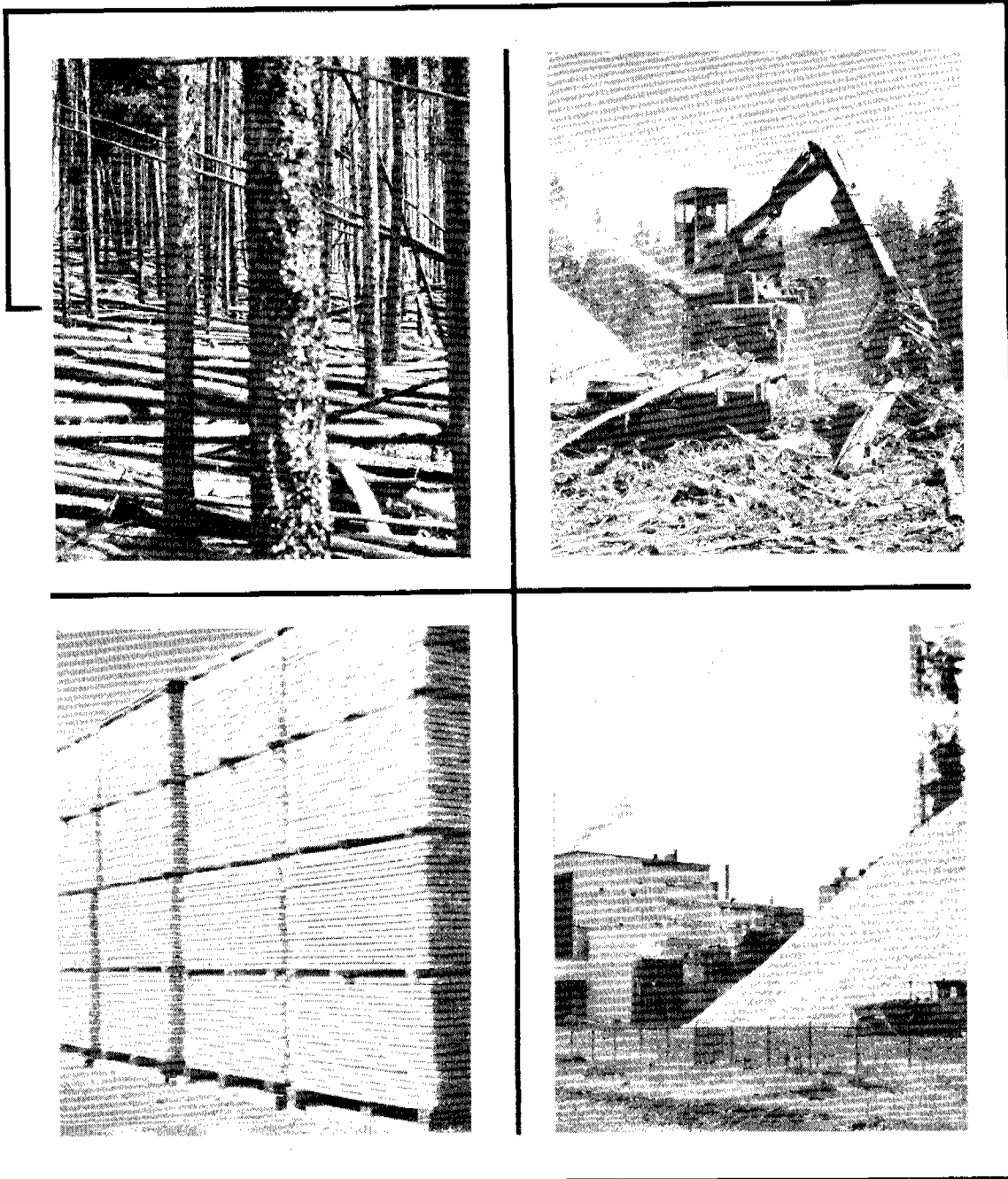


HARVESTING AND UTILIZATION OPPORTUNITIES FOR FOREST RESIDUES in the northern rocky mountains



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

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WOOD PRODUCT AND MARKET TRENDS INFLUENCING
RESIDUE UTILIZATION

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ABSTRACT

Of the four major potential uses for forest residues, none offer any immediate prospects for large scale use. We can expect cyclical demand for residues to supplement the material supply to the pulp and paper industry. The rising cost of energy could generate the greatest potential demand for residues.

KEYWORDS: residue utilization, residue markets

The potential markets for forest residues can be classified into four primary categories. They are:

- A. Reconstituted panel products, such as particleboard.
- B. Pulp, paper, and chemical extractives.
- C. Post, poles, and house logs.
- D. Fuel.

I will deal with each of these separately, and attempt to indicate some of the major influences which are expected to change the trend of forest residue utilization for each of the potential uses.

PANEL PRODUCTS

The particleboard industry, (which includes medium density fiberboard), grew up on wood residues. However, the basis is not forest residues, but mill residues. The difference is critical to the industry. Mill residues are convenient, already dry, and are available at a cost which is little more than the cost of transportation. The only problem with mill residue is that there is not much left. With uncommitted mill residue no longer available, it would appear that any growth in the production of panel products would need to be based on forest residues, as they are the least expensive alternative. However, the Northern Rocky Mountain region is at a distinct disadvantage compared to the rest of the country when it comes to making panel products of forest residues. Local markets are not large enough to absorb any significant increase in production, and the large markets are all quite distant.

It simply makes no economic sense to manufacture a product in the Rockies for shipment to the Mideast and East, when the same product could be made closer to the market. Forest residues are widely available, so there is no need to locate in the Rocky Mountains.

The cost of energy will also have a significant effect on the potential production of panel products, and for plants located in the Rocky Mountains, rising energy costs are a double curse. In addition to the direct energy consumption of manufacture, the panel products also use energy indirectly through the resins used to glue the particles together. The resin is produced from natural gas, so that the cost of resin is directly related to the cost of gas, which has about doubled in the past four years, and can be expected to continue to increase faster than other costs. Resin accounts for about one-third of the total cost of manufacturing particleboard, so that rapid increases in resin costs will place particleboard at a competitive disadvantage with other panel products.

As energy costs rise, so do transportation costs, which places an extra burden on reconstituted panel products from the Rocky Mountain area. Because of the long distances to market areas, an increase in transportation costs has a greater effect on products from this area than it has on similar products produced closer to the market.

All in all, the prospects for using forest residues to produce reconstituted panel products in the Northern Rocky Mountain region are not bright. There are many locations in the country which have adequate supplies of raw material, where the costs of materials and transportation are lower, so that we should expect any significant growth in the use of forest residues for panel products to occur not here, but in the South, the Midwest, and the Pacific Southwest.

PULP, PAPER, AND CHEMICAL EXTRACTIVES

Within the past two decades, the pulp and paper industry in the Northwest has shifted from a supply based primarily on roundwood to one based on mill residues. The shift has gone far enough that local pulp production and chip exports now use virtually all available supplies of chippable mill residues. There are, in the Northern Rockies, still a few small mills that do not sell chips, but they are scattered and isolated, and do not produce enough volume to provide a basis for an expansion in pulping capacity. Any increase in pulp production in the Northwest must be supplied from forest residues.

This is not to say, however, that the pulp and paper industry will be a major user of forest residues. The industry can be expected to use the cheapest material available to it, and that is not likely to be forest residues from the Northern Rockies. Existing mills that may require additional chips will go to forest residues close to them, and new mills will be built close to residues and markets. This means that the demand for forest residue chips from the Northern Rockies will come from existing mills in or close to this area. Since these mills are already well supplied with mill residues, it would appear that there is no impetus for using forest residues.

In the long run, there may be enough mill residues, but there are often short-run shortages, and we can expect to see these shortages filled with forest residues. There have been recurring patterns of periods when the demand for chips stays high while the output of lumber and plywood mills (including chips) is down, so that the pulp and paper mills are faced with raw material shortages. During these periods, there will be a demand for chips from forest residues, not only from local

mills, but from the surrounding area. It should be recognized that these periods of demand for forest residues will be temporary, and although they may last several years, they will come to an end, perhaps abruptly.

The use of wood residues to produce chemicals, (including alcohol for fuel), has received a considerable amount of attention, but we should consider the total volume involved before speculating on the possible effect on forest residues. The total volumes for all the chemical extractives is very small when compared to the volumes of residue available, so that we can be sure that no matter what happens with extractives, the effect on forest residues will be negligible. Only the production of wood alcohol for fuel has a promise of significant volume, but there are technical and economic problems that are not yet resolved, so that it is too early to speculate on the prospects. The only thing we can be sure of is that it will not come soon.

POST, POLES, AND HOUSE LOGS

These three products have been combined, as all of them require sound wood in round wood form. All may be made of dead material, and posts can be either dead or can be small green trees.

The demand for posts and poles has been fairly steady over the past decade, and there seems to be no reason to expect any dramatic changes. The demand for posts may get a small boost from higher energy costs, as the cost of producing and transporting steel posts will go up more than will the costs for wood posts. This effect may be very important to an individual producer, but won't have a large effect on the total use of forest residues for these products.

Trends in the demand for house logs are very difficult to predict. Interest in log houses grew dramatically during the past five years, to the point that some producers were having difficulty in finding enough suitable logs. However, with the recent drop in housing, the log house market tumbled like everything else. It would appear that log houses follow about the same patterns as conventional housing, but may have more severe swings. Many of the log homes are used for vacation homes, where the demand may be very high in good times, and almost nil in bad times.

The house log industry has the potential for using significant quantities of the standing dead residues. With a steady source of material supply and efficient production techniques, log construction can compete economically with conventional housing construction.

FUEL

Energy production represents the greatest potential market for forest residues in this area, and although it is not currently feasible to use forest residues for fuel, we can expect that it will be in the near future. The process of converting to wood fuels is already well underway. Many of the larger forest related industries have already made the necessary changes to convert from natural gas or oil to wood. All of the current use of wood in this area, however, is based on mill residues (hog fuel) which are available for little more than the cost of transportation. We can expect a continuation of this trend until the available mill residues are all being used, which will not be long. At that time, there will not be a shift to forest residues relative to mill residues.

Instead, the process of conversion to wood will end, until rising prices for fossil fuels push the cost of energy high enough to make forest residues attractive.

In order to predict when forest residues will become economical fuel, one must forecast the price rise of fossil fuels relative to other costs. I have not seen anyone willing to attempt it. We should expect, though, that it will not happen within the next five years, but is quite likely within the next ten to twenty. It has already happened in the Northeast, where energy costs are much higher than they are here, and the costs of collecting forest residues are lower. There is at least one public utility, and several large industrial plants that are currently using forest residues to supply all of their energy.

To summarize, the four major potential uses for forest residues, none offer any immediate prospects for large scale use. We can expect cyclical demand for residues to supplement the material supply to the pulp and paper industry. These periods will occur when the demand for paper products remain high while the demand for lumber and plywood are down. We are now entering such a period, and may soon see an increased use for chipped forest residues. Posts and poles represent a fairly small but steady demand for standing dead residues, and a recovery at the housing market should revive the demand for house logs.

The rising cost of energy could generate the greatest potential demand for residues. Although forest residue is not currently an economical fuel in this area, we should expect that it will become so in the near future.