RESTRUCTURING OF THE RAW MATERIAL SOURCES FOR PALLETS

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ABSTRACT

Pallets are the largest single user of hardwood lumber in the country and rank second only to the construction industry in total use of sawn products. At one time, the pallet industry obtained its raw material almost exclusively from the lower grades of lumber produced as a by-product of the hardwood sawmills. The demand, however, for pallets, furniture, kitchen cabinets, flooring, and railroad ties has exceeded the supply of these lower grades. The result of these dynamic market pressures has been a major restructuring of traditional resource use patterns.

TRANSITION OF RAW MATERIALS USED

Pallets are the largest single user of hardwood lumber in the country and rank second only to the construction industry in the use of sawn products. In 1987, the industry produced a record 418 million pallets (National Wooden Pallet and Container Association 1988) and consumed over 7 billion board feet of lumber. Of this, hardwoods accounted for about 80 percent of the total used. With the growth of this industry has come many changes in the form and source of raw materials used.

Lumber

In the late 1940's, the pallet industry relied almost entirely on the lower grades of random-width, random-length lumber generated as a by-product of hardwood grade sawmills, producing cutting grades of lumber for the furniture industry. The predominant grades of hardwood lumber used in pallets have been No. 2 and No. 3 Common. In some areas, when hardwoods became difficult to obtain, softwood lumber was substituted. In those cases, the predominant grades of softwood lumber used were Economy and Utility grades of West Coast lumber and No. 3 and No. 4 Southern Pine structural grades.

The process of obtaining pallet parts from hardwood and softwood lumber generally differs. With hardwoods, the lumber is usually gang crosscut and then the unacceptable defects removed. In softwood lumber, the unacceptable defects are generally removed, then the acceptable portion is crosscut to required lengths.

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As the pallet industry became a more dominant lumber user, the hardwood sawmill industry began manufacturing a sound grade of lumber referred to as "pallet grade" in 4-, 6-, and 8-inch widths. Use of pallet grade not only reduced the waste incurred by the pallet industry in using random-width lumber, but also assured the sawmill industry a growing market for difficult-to-move lower furniture grades.

Cants

By the 1960's, the demand for the lower grades of lumber began to exceed the supply generated by the grade mills in many local areas. It was about then that we began to see vertical integration between these two industries. Most of the integrated sawmills, however, were still operated like traditional hardwood grade mills with the high-valued lumber going to the furniture industry and the lower grades going to the pallet industry. It was also about this time that we saw the advent of the 4-, 6-, and 8-inch cants.

The cant concept caught on quickly because it was advantageous to both the sawmill and the pallet mill. In the sawmill, it shortened the time each log spent at the headsaw, not only increasing total volume produced but also allowing more volume of the higher-valued grades. In the pallet plant, using cants eliminated the waste generated from random-width lumber and gave greater flexibility in the variety of potential pallet part sizes.

Roundwood

In the 1970's, as raw material supplies tightened, we began to see more and more bolter mills and scragg mills being used to produce pallet parts from pulpwood bolts. Also, in the captive sawmills, there was less emphasis placed on producing grade lumber. The concept of going directly from roundwood to pallet parts became common. In the 1980's, we have seen much of the pallet industry take this practice one step further by going to tree-length material, consequently eliminating the log step. With tree-length material, the stems are crosscut to the length, or multiples of the length, of the pallet parts to be produced. This virtually eliminates end trim waste, increases volume yield, and facilitates handling through multiple scragg saws, gang ripsaws, or other multiple sawing operations.

REGIONAL INFLUENCES

The changes in raw material sources have not been uniform throughout the country. In the west, softwood dimension still remains the major source of raw material for the pallet industry. Several integrated sawmills, however, have recently begun supplying their pallet mills with large volumes of cants of western hardwood species, predominately alder, oak, and maple.

In the east, the pallet industry continues to use mostly hardwoods. About one-fourth of the raw material is consumed in the form of roundwood--the

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2 Based on an analysis of unpublished survey data collected by Dwight R. McCurdy and James T. Ewers, Southern Illinois University, Carbondale, IL.
remainder being shared about equally between cants and lumber (including precut pallet stock). But even within the east, there are differences in the form of raw material used. Generally, pallet mills in the north are more likely to use cants and lumber than those in the south. This is because hardwood grade lumber production has been increasing in the north central and northeast regions over the last 20 years (Luppolo and Dempsey, in press) and the supplies of the lower grades of sawn material are more plentiful. These regions also experience less competition from the hardwood flooring industry for the lower grades of oak lumber because the majority of the flooring mills are located in the south.

In the south, hardwood lumber production has decreased and many of the pallet mills have turned to roundwood as a source of raw material. It is most often in the south and southeast that the source of roundwood will be found to be tree-length material. There are now pallet manufacturing facilities with tree-length stems coming in one end of their plant and pallets coming out the other—and with a minimum of storage between.

The trend within the hardwood pallet industry appears to be one of gaining greater control of their raw material supply by moving closer to the standing tree. In essence, when pallet manufacturers purchase a stand of timber, they are not competing with the grade sawmill industry but complementing it. The higher quality sawlogs are sorted out and sold to the hardwood grade sawmills. The pallet manufacturer uses the smaller diameter sawlogs, poletimber, and pulpwood that the grade sawmills cannot profitably saw.

However, in considering the changing resource use patterns of the future, we must recognize the impact that continued growth in the pallet industry will have on both our pulpwood and sawtimber resources.

OUTSIDE INFLUENCE

Other factors have contributed to the changes in source and form of the pallet industry’s raw material. For example, the devaluation of the dollar overseas has resulted in increased exports in the higher grades of hardwood lumber. With less of the higher grades available, our domestic furniture and kitchen cabinet industries have dipped into the lower grades to furnish part of their raw material requirements. This has added additional competition for the resource used by the hardwood pallet industry.

The hardwood flooring industry, after declining in production for 25 years, made a turnaround in 1980, and more than doubled its consumption of lumber between 1980 and 1987. In 1987, the flooring industry consumed nearly one-half billion board feet of predominantly No. 2 Common oak. Two-thirds of that consumption occurred in the south central region, which was also experiencing a decline in hardwood lumber production. This consumption has served to further increase competition for this limited resource.

Hardwood use in railroad construction is also in direct competition for the same resource as pallets. Although consumption by the railroads nearly doubled between 1960 and 1976, it has since been on a downward trend. In 1986, approximately 880 million board feet (USDA Forest Service 1988) were consumed for railroad ties, of which 90 percent were hardwoods, principally oak.
As the largest consumer of sawn hardwood products, the pallet industry is exerting a dominant influence on our hardwood resource use patterns. Coupled with market pressures from hardwood exports and domestic uses like furniture and kitchen cabinets, hardwood flooring, and railroad ties, there has been a major restructuring of traditional resource use patterns needed to cope with changing times.

LITERATURE CITED

