



HARDWOOD MARKET REPORT

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CHANGES AND TRENDS IN THE PALLET INDUSTRY

Editorial Note

HARDWOOD MARKET REPORT is pleased to present “**Changes and Trends in the Pallet Industry**” in a three-part series. This paper was produced by **Robert J. Bush**, Associate Professor and Director, Center for Forest Products Marketing and Management, Department of Wood Science and Forest Products, Virginia Tech, Blacksburg, Virginia; **Philip A. Araman**, Project Leader, USDA - Forest Service, Southern Research Station, Blacksburg, Virginia; and was developed with the help of the personnel of the Northeastern Forest Experiment Station, USDA - Forest Service, Princeton, WV. Funding and technical assistance for the research reported in this paper were provided by the Center for Forest Products Marketing and Management, Virginia Tech and by the Southern Research Station, USDA - Forest Service, Blacksburg, Virginia. “**Changes and Trends in the Pallet Industry**” is printed in the **HARDWOOD MARKET REPORT** with special permission from **Robert J. Bush, Ph.D.** Part one of the series, “**TRENDS IN THE USE OF NEW WOOD MATERIALS**”, begins on page 11.



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Changes and Trends in the Pallet Industry: The Use of New Wood Materials

By: Robert J. Bush, Ph.D. and Philip A. Araman, MS

INTRODUCTION

Wood has dominated the pallet industry as its principal raw material since palletized material handling began. Pallet production and use grew dramatically after World War II and wood remained the material of choice. Throughout this period the pallet industry has been an important market for lower grades of hardwood lumber and cants. Today, the demand for pallet grade hardwood material is strong. But what does the future hold for wood in the pallet industry?

One of the problems with predicting the future based on the past is that the pace of change has increased. What would be a breakneck rate of change for someone in 1900 appears normal to us as we approach our "turn of the century." As a result, today's businessman is wise to pay more attention to changes and trends than did his Grandfather, or even his Father.

In this series we take a look at some of the changes and trends that are affecting the U.S. pallet and container industry. These trends do not suggest that manufacturers will stop using wood for pallets, at least not in the near future. However, trends are worth monitoring because **even a small market share change can translate into a large volume of lumber.** Also, to a watchful pallet or lumber manufacturer, trends provide insight concerning the needs of their customers and how their

products can better be marketed.

We begin by describing **TRENDS IN THE USE OF NEW WOOD MATERIALS** by the pallet industry and the magnitude of the pallet market as compared to other markets for hardwood lumber. In the second part of the series, we will discuss two of the most important factors affecting hardwood use for pallets: **PALLET RECOVERY AND THE USE OF MATERIALS OTHER THAN SOLID WOOD** (i.e., alternative materials) to construct pallets. In the final part of this series we will discuss **CHANGES IN THE STRUCTURE OF THE INDUSTRY** which may affect the use of hardwoods.

Our information concerning new wood use and recycling by the pallet and container industry is based on a series of studies conducted by the **Center for Forest Products Marketing and Management** at Virginia Tech in collaboration with scientists at the **U.S. Forest Service**. The studies investigated activity in the years 1992, 1993, and 1995. The results are based on surveys of U.S. manufacturers in the pallet and container industry, which was defined to include Standard Industrial Classifications (SICs) 2441, 2448, and 2449. Information concerning the recovery and disposal of pallets at landfills resulted from a 1995 study of Municipal Solid Waste (MSW) and Construction/Demolition (C&D) waste landfills in the contiguous United States.

PART I: TRENDS IN THE USE OF NEW WOOD MATERIALS

Firms in the U.S. wood pallet and container industry used 4.53 billion board feet of solid hardwood in 1995 (**Figure 1**). Lumber and cants accounted for 3.87 billion board feet (85 percent of the total) and the remaining volume consisted of hardwood pallet parts.

A comparison of the results of our 1992, 1993 and 1995 studies shows the use of hardwood lumber and cants decreased slightly over this period. From 1992 to 1993, estimated use dropped approximately 105 million board feet. However, between 1993 and 1995 it increased by 15 million board feet. Overall (1992 to 1995), hardwood lumber and cant use decreased by 2 percent based on volume.

The use of hardwood pallet parts increased from 1992 to 1993 by 24 percent but decreased 32

percent between 1993 and 1995. Overall, hardwood part use in 1995 was down by over 100 million board feet as compared to use in 1992.

The **1997-98 North American Factbook**¹ lists 1995 U.S. production of hardwood lumber as 11.88 billion board feet. Using this figure, **the volume of solid hardwood use by the pallet and container industry in 1995 was equivalent to 38 percent of production.** The **1997-98 North American Factbook** lists 1992 hardwood lumber production at 9.80 billion board feet and 1993 production at 10.50 billion board feet. These figures indicate that **use for pallets and containers was equivalent to 48 percent of production in 1992 and 46 percent in 1993.** The lower percentage in 1995 resulted from both

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decreased use of new (i.e., virgin) solid hardwood for pallets and an increase in hardwood lumber production.

While pallets and containers account for a large proportion of hardwood lumber use (and, in particular, lower grade lumber use), they are not the largest use of hardwood timber harvests. For example, fuelwood accounted for 38.5 percent of the volume of U.S. hardwood roundwood harvests in 1991². Sawlogs and pulpwood accounted for 28.6 percent and 29.5 percent of harvests, respectively. Since pallet and container use accounted for less than one-half of the sawlog use and undoubtedly a smaller percentage of pulpwood use, fuelwood was the largest single use of hardwood roundwood harvests in 1991.

A significant characteristic of the pallet and container industry is its ability to use a great variety of timber species. This can be a real advantage to sawmills seeking markets for non-select species. Among the hardwoods, oak was the most commonly used single species in 1995, accounting for 27 percent of total hardwood use (Figure 2). Yellow-poplar was the second most commonly used hardwood species (8 percent of hardwood use). However, the majority of hardwood used by the industry (56 percent) was not segregated by species and instead was used as mixed hardwoods. The mixed hardwood group includes both select and non-select species.

Comparing 1995 to 1992, oak as a proportion of total hardwood use for pallets and containers decreased over 10 percentage points. Yellow-poplar and alder use each decreased by approximately four percentage points. Increases occurred in the use of mixed hardwoods and other species.

The pallet and container industry uses solid softwoods (lumber, cants, and parts) in addition to hardwoods. Solid softwood consumption was an estimated 1.79 billion board feet in 1995 (Figure 1). Most of this use (86 percent) was in the form of lumber and cants rather than pallet parts.

Mirroring hardwood trends, the use of softwood lumber and cants decreased from 1992 to 1993 and increased slightly between 1993 and 1995. Overall, (i.e., 1992 to 1995), softwood lumber and

cant use decreased by 5.5 percent. During the same period, softwood pallet part use decreased by 275 million board feet, a dramatic 52 percent reduction. Based on these results, it is clear that solid softwoods were not widely substituted for solid hardwoods in pallets and containers during the 1992-95 period. Strong demand for lower-grade hardwoods since 1995 may have caused some pallet manufacturers to utilize softwoods. However, pallet buyers may not accept this substitution and lower-grade Western softwood supplies have been restricted by quotas on Canadian softwood exports to the United States.

Solid softwood use in 1995 (Figure 2) was dominated by Southern pines (41 percent of total softwood use by volume); the spruce-pine-fir group (31 percent), Douglas-fir (11 percent), and the hemlock-fir species group (10 percent). The remaining volume of softwoods used by the industry was split among several species including imported species such as radiata pine. When compared to 1992, Southern pine use (as a proportion of total softwood use) essentially was unchanged in 1995. The use of Douglas-fir, however, decreased by over 17 percentage points.

Unlike hardwoods, pallets and containers do not represent a large part of the market for solid softwoods. With reported 1995 U.S. production of softwood lumber¹ at 32.2 billion board feet, use for pallets and containers is equivalent to only 5.6 percent of total volume. In 1992, softwoods used for pallets and containers represented a volume equivalent to 6.2 percent of the 34.5 billion board feet produced in the U.S.

The pallet and container industry uses wood panel products (principally softwood plywood and oriented strand board) in addition to lumber and solid wood parts. In 1995, the industry used 187 million square feet (3/8-inch basis) of softwood plywood, and 21 million square feet (3/8-inch basis) of oriented strand board. Much of this use (64 percent of softwood plywood and 60 percent of OSB) is for containers. However, panel-deck and even panel-block pallets are manufactured. **Increased utilization of wood panels (especially plywood) for pallets is possible in the future as a result of panel industry efforts to promote this application of their products.**

¹Pease, D. A., K. Porter, and T. Blackman, editors. 1997. 1997-98 North American Factbook. Miller Freeman, Inc. San Francisco, California

²Powell, D. S., J. L. Faulkner, D.R. Darr, Z. Zhu, and D. W. MacCleery. 1993. Forest Resources of the United States, 1992. General Technical Report RM-234. United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Figure 1. Estimated Volumes of Solid Wood Used for the Production of Pallets and Containers in the United States: 1992,1993,1995 (Lumber, Cants and Parts).

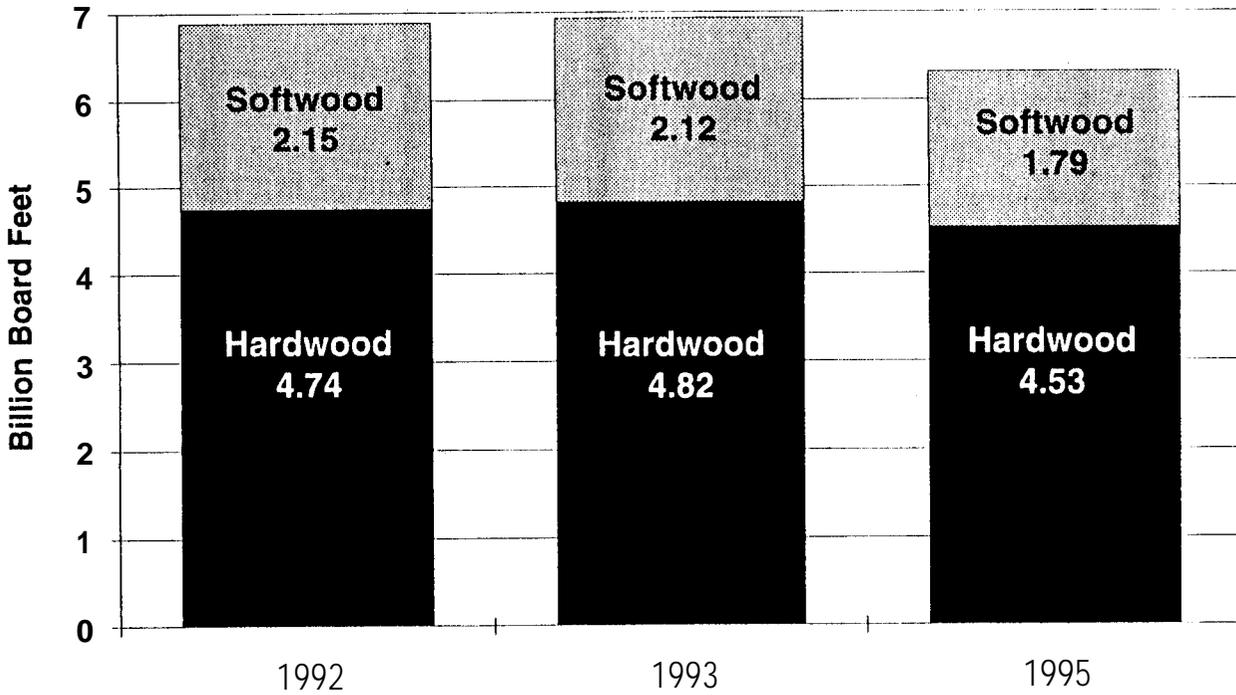


Figure 2. Types of Solid Wood Used to Produce Pallets and Containers in the United States: 1995.

