



HARDWOOD MARKET REPORT

Lumber News Letter



ISSUED EVERY SATURDAY - ESTABLISHED 1922

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VOLUME LXXVI

March 7, 1998

OUR 76th YEAR

NUMBER 10

CHANGES AND TRENDS IN THE PALLET INDUSTRY

Editorial Note

HARDWOOD MARKET REPORT is pleased to present “**Changes and Trends in the Pallet Industry**” in this issue, the second of 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 two of the series, “**TRENDS IN THE RECOVERY AND RECYCLING OF USED PALLETS**”, begins on page 13.



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Changes and Trends in the Pallet Industry: Recovery and Recycling

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

INTRODUCTION

In the first article of this three-part series we described trends in the use of new wood materials for pallets and containers. These trends support the belief that new pallet production in recent years has been level or perhaps slightly decreasing while the demand for pallets contin-

ues to grow. This gap has resulted, in part, from increased recovery of used pallets and pallet parts and (to a lesser extent) to the use of pallets made from alternative materials. **In this segment of our series we investigate the first of these factors - pallet recovery and recycling.**

PART II: TRENDS IN THE RECOVERY AND RECYCLING OF USED PALLETS

Pallet recovery and recycling¹ occurs at several levels in the use cycle. Pallet users, new pallet manufacturers, *recycle only* businesses, landfill operations, and possibly others are involved. We studied two segments of this activity: **recycling by firms in the industry (SIC 2448)² and recovery/recycling at landfills.** These segments account for a large percentage of pallet recovery. However, they do not represent all pallet recovery activity; other types of organizations are involved. For example, pallet users may repair and recycle pallets within their operations.

Recovery and Recycling by the Pallet Industry

Pallet recycling is not a new activity. In fact, the industrial recycling of pallets emerged in the 1960s and grew rapidly in the 1980s and 90s. Eichler,³ in his 1976 book, **Wood Pallet Manufacturing Practices**, states:

The pallet repair and recycling business has now become an integral part of the pallet industry

However, pallet recovery and recycling, once a secondary activity, has in recent years become primary to many firms. **The National Wooden Pallet and Container Association (NWPCA)** reports that pallet recycling is now the most profitable sector of the pallet industry.

Many factors have contributed to the recent and rapid growth of pallet recovery and recycling by the industry:

- Increased awareness of the environment and activities that affect the environment have caused a previously unconcerned public to question the use of new wood for pallets;
- pallet producers, concerned with the availability and price of new lumber and cants, have found it economically advantageous to repair pallets and salvage material from used pallets;
- pallet users have turned to recycled pallets as away of decreasing their product handling costs;
- pallet disposal costs can be significant and increasing attention is being paid to reducing or avoiding these costs through recovery and recycling;
- barriers to entry into pallet recycling are relatively low, resulting in an increase in the number of pallet recovery and recycling only firms (i.e., firms that do not manufacture new pallets); and
- public concerns over the capacity and cost of landfills have resulted in some facilities banning pallets.

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We estimate that firms in the pallet industry recovered 171.1 million pallets for recycling in 1995. The wood content of these pallets was estimated to be 2.6 billion board feet. In previous studies, we estimated that the industry recovered 65.8 million pallets in 1992 and 83.3 million in 1993 (**Figure 1**). **This means that between 1992 and 1995 the number of pallets recovered by the industry grew by 160 percent.**

Once recovered from the waste stream, pallets are most likely to be recycled for their original purpose. **Eighty-seven percent of the wood contained in pallets recovered by the industry in 1995 was used again in a pallet.** This percentage includes pallets that were inspected, found not to need repair, and sold for reuse as-is. Also included are pallets that were repaired and sold and the wood content of parts that were un-nailed and used to repair pallets or build complete pallets. **Less than one percent of the wood in pallets recovered by the industry was eventually landfilled.**

The impact of pallet recycling can be seen by comparing the volume of new solid wood used by the industry (as reported in part one of this series) to recovered wood use (as reported above). This comparison suggests that, in 1995, approximately one out of every three wood pallets sold by firms in the industry consisted of recovered material.

In 1995 we found that approximately ten percent of the wood (by volume) in recovered pallets was ground or chipped. This material was used for non-pallet products such as animal bedding, mulch, and for composite products. A large portion of the ground pallet material, 43 percent in 1995, was used as fuel.

Pallet Recovery at Landfills

Recycling by firms in the industry constitutes one portion of pallet recycling activity. We investigated another portion by contacting over 1,200 Municipal Solid Waste (MSW) landfills and almost 600 Construction and Demolition (C&D) waste landfills selected from a list of all state licensed facilities in the U.S. (excluding Alaska and Hawaii). We used mail surveys and telephone contacts to collect data rather than the direct examination of waste delivered to landfills. Consequently, we sacrificed some information depth for breadth. However, we believe this to be an appropriate trade-off as our goal was to estimate nationwide totals.

Approximately 32 percent of responding MSW landfills and 33 percent of C&D landfills did not accept pallets for landfilling as-is (i.e., without processing). However, 38 percent of MSW and 32 percent of C&D landfills operated a wood/yard waste recovery and processing facility. These facilities at MSW landfills processed 880 thousand tons of pallets in 1995. At C&D landfills, 161 thousand tons of pallets were processed. Pallets accounted for approximately 12 percent of the wood/yard waste processed at MSW facilities and four percent of wood/yard waste processed at C&D facilities.

The greatest amount of pallet material processed at landfills was ground. This ground material was used for mulch, bedding, compost, soil amendments, and fuel (Figure 2). Some pallets were used as fuel without grinding and some ground material was used as landfill cover. At MSW facilities, three percent of the pallets were recovered for reuse as pallets. At C&D facilities, one percent were repaired and reused and 12 percent were reused as pallets without repair.

¹For brevity, the term recycling is used in this paper to designate those activities that result in the reuse of a pallet or the wood in a pallet. These activities included: inspection and reuse; repair and reuse; chipping for mulch, animal bedding, and furnish (i.e., raw material for wood panels such as particleboard and fiberboard); and use as fuel. Activities that result in no useful output (e.g., landfilling, burning without capturing the energy) are excluded. This definition of recycling includes primary, secondary, and tertiary activities and may not correspond to some definitions of the term.

²Standard Industrial Classification 2448 includes firms Primarily engaged in manufacturing wood or wood/metal combination pallets and skids (one sided pallets). This classification includes firms using new wood and firms using recovered pallet materials.

³Eichler, J.R. 1976. Wood Pallet Manufacturing Practices. Eichler Associates, Cape Coral, Florida.

Figure 1. Number and Estimated Wood Content of Pallets Recovered by the Pallet Industry (SIC 2448): 1992,1993,1995.

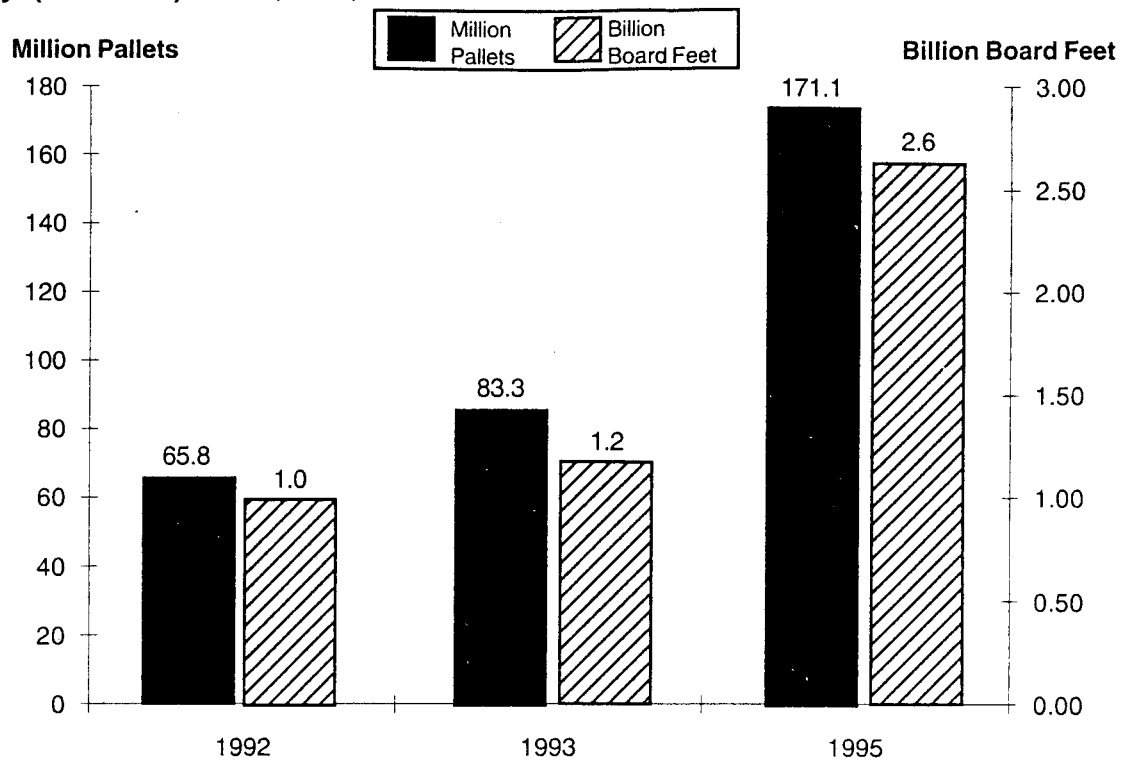


Figure 2. Use of Pallets Received for Recycling at Municipal Solid Waste (MSW) and Construction/Demolition (C&D) Landfills: 1995.

