

Recycling Growth Reducing Pallet Industry's Need for New Wood

Rise in Recovered Materials Drives Down Use of New Wood, Study Shows

(Editor's note: This is the second part of a two-part article. In 1994, the authors reported in the Pallet Enterprise on their study of new and recovered wood use for pallets and containers. In part one of this article, published in September's Pallet Enterprise, they reported on the results of a new survey in 1996 of new wood use by the pallet and container industry, comparing the latest results to previous studies. Their research is based on a study of 2,600 wooden pallet and container manufacturers in the United States who were surveyed about their 1995 production. Part two, below, focuses on recycled pallets.)

By Robert Bush
And
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Part one of this update on the U.S. pallet industry reported on changes in new wood use. The use of lumber, cants, and parts (both hardwood and softwood) declined from 1992 to 1995. The major factor affecting the use of new wood for pallets is recovery and recycling. Further, growth in recovery has overshadowed declines in the use of new wood. Part two of this update focuses on the recovery and recycling aspect of the industry and how it has changed in recent years.

Use of the word "industry" refers to businesses included in Standard Industrial Classification 2448 (wood pallets and skids). However, pallets also are recovered and recycled by entities outside this category. For example, a separate study conducted by the Center for Forest Products Marketing and Management determined that a considerable number of pallets are recovered at landfill opera-

tions. Consequently, results presented below should not be interpreted to represent all of the pallet recovery occurring in the United States.

Also, the term "recycling" refers to activities that result in the reuse of a pallet or the wood in a pallet. These activities include: inspection and reuse; repair and

reuse; chipping for mulch and animal bedding; and use as fuel. Activities that result in no useful output (e.g., disposing of pallets in a landfill or burning without capturing the energy) have been excluded. This definition of recycling includes primary, secondary, and tertiary activities and may not correspond to

some other definitions of the term.

Factors In Growth

Pallet recycling is not a new activity. In fact, as early as 1976, John R. Eichler, in his book, *Wood Pallet Manufacturing Practices*, wrote that pallet repair and recycling had become an "integral part" of the overall pallet industry. Recovery and recycling, once secondary activities, have become primary to many firms in recent years. According to the National Wooden Pallet and Container Association, recycling is now the most profitable sector of the pallet industry.

Several factors have contributed to the recent, rapid growth of pallet recycling. Increased awareness of the environment and activities that affect the environment have caused some to question the use of new wood for pallets. Pallet repair companies have found it economically advantageous to repair pallets and salvage material from used pallets. Pallet users have turned to recycled pallets as a way of reducing their product handling costs. Pallet disposal costs can be significant, and increasing attention is being paid to reducing or avoiding these costs. Also, barriers to entry into pallet recycling are relatively low. Finally, concerns over the capacity and environmental aspects of landfills have resulted in some facilities banning pallets.

Nationwide, approximately 51 percent of the firms in the study recycled pallets in 1995. This represents an increase of 7 percentage points from 1993. The proportion of firms involved in pallet recycling was higher in the West (81 percent) than in any other region. Approximately 51 percent of the Midwest firms included in the study were involved in pallet recycling. Fewer than 50 percent of the pallet firms in the South and Northeast were involved in recycling.

The average number of pallets recovered by recycling firms in 1995 was approximately 300,000. However, the median was only 78,000 — indicating that the respondents included some relatively large recyclers. The average number of pallets received for recycling increased from 146,000 in 1992 to 174,000 in 1993.

Figure 1 shows the number of pallets and the volume of wood recovered in each year the study was conducted. In 1995, an estimated 171 million pallets were recovered by the pallet industry. This represents a 105 percent increase

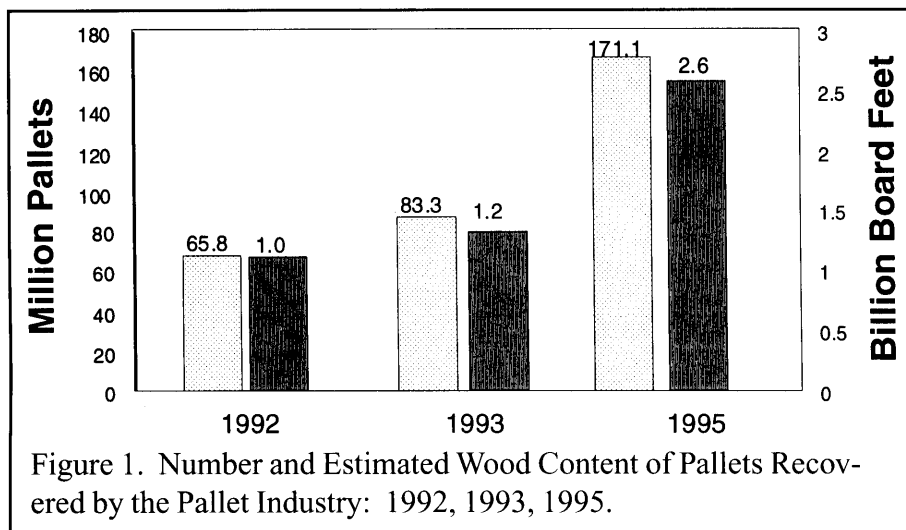


Figure 1. Number and Estimated Wood Content of Pallets Recovered by the Pallet Industry: 1992, 1993, 1995.

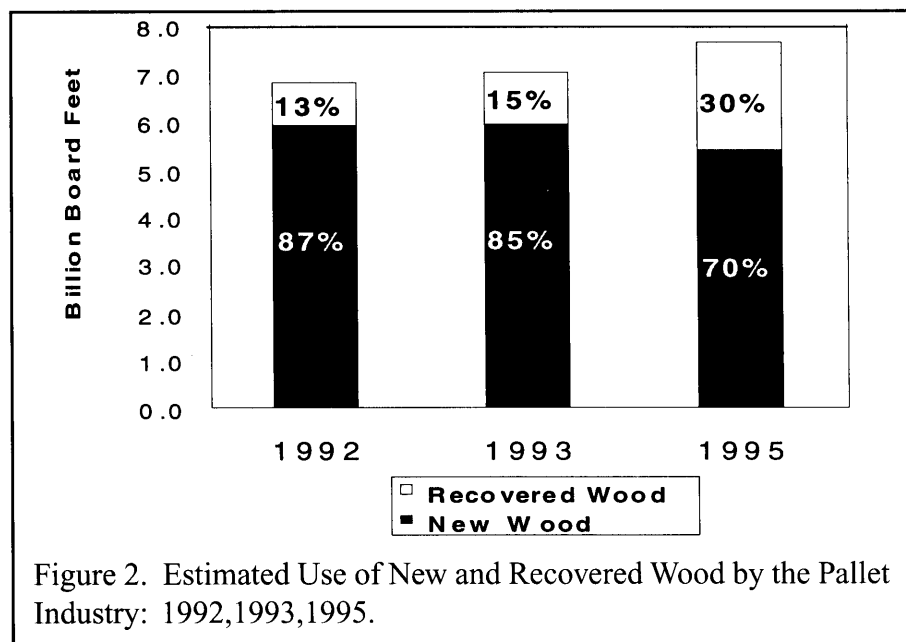


Figure 2. Estimated Use of New and Recovered Wood by the Pallet Industry: 1992, 1993, 1995.

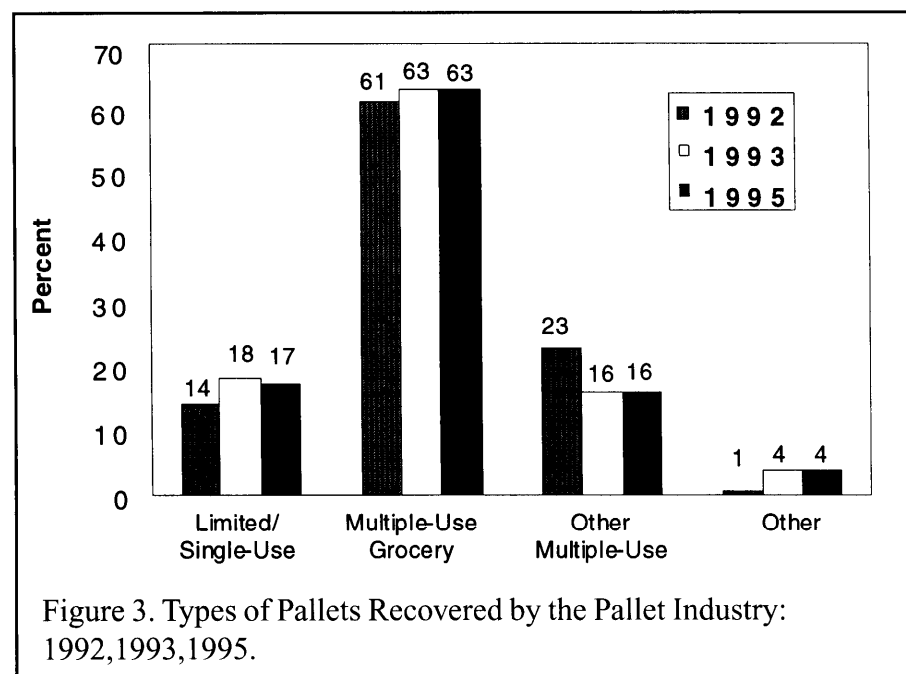


Figure 3. Types of Pallets Recovered by the Pallet Industry: 1992, 1993, 1995.

from 1993 and a 160 percent increase from 1992. The estimated wood volume of recovered pallets increased 111 percent from 1993 to 1995, and 154 percent from 1992 to 1995.

Pallet Recovery Increasing

Of the 2.61 billion board feet of pallet material recovered in 1995, 2.28 billion board feet (about 87 percent) were used again in a pallet. In 1995, the pallet and container industry used an estimated 6.31 billion board feet of new solid wood (lumber, cants, and parts). Therefore, the ratio of recycled to new pallet material was 0.36, or 36 percent. Compared to the 1993 ratio, 0.15, this indicates a substantial increase in pallet recovery.

The U.S. Environmental Protection Agency reports that in 1993 the overall recovery to generation rate for wood was 10 percent. The EPA also reports that paper and paperboard was recovered at a rate of 34 percent, glass at a rate of 22 percent, nonferrous metals (excluding aluminum) at a rate of 63 percent, and aluminum at a rate of 35 percent. While the methods used in this study differ from those used by the EPA, it is clear that wood pallets are recovered at a rate comparable to or higher than many materials.

Another way to view the impact of pallet recovery and reuse is to investigate the mix of new and recovered wood used in pallets and changes in this mix over the study period. With a few assumptions, these data may be estimated from the study results. As shown in Figure 2 (page 60), total wood use for pallets increased from 1992-1995. However, new wood use declined from 87 percent of the total in 1992 to 70 percent in 1995 in the use of recovered pallets and pallet wood — increases that more than compensated for decreasing new wood use.

In 1995 and 1993, 63 percent of the pallets recovered were of the multiple-use grocery type. (See Figure 3, page 60.) This represents a slight increase from 1992. Other multiple-use pallets made up 16 percent of the pallets recovered in 1995 — a decrease as compared to our 1992 findings. Limited or single-use pallets accounted for 17 percent of the pallets recovered in 1995. Other types of pallets made up 4 percent of total pallets recovered in 1995, an increase compared to 1992 findings.

Regional Differences

Some differences were found in the

mix of pallet types received for recycling among the four regions of the country. The multiple-use grocery type comprised 61 percent of the pallets received for recycling in the Midwest and 69 percent of pallets received in the South. The proportion of limited or single-use pallets ranged from 22 percent in the Northeast to 13 percent in the South.

Approximately 63 percent of pallets recovered in 1995 were repaired and reused (Figure 4, page 64). This was similar to our estimates for 1993 (61 percent) and 1992 (62 percent). An additional 10 percent of the pallets recovered in 1995 were

reused without repair. Approximately 18 percent of the recovered pallets were taken apart (un-nailed), and 8 percent were ground or chipped. Less than 2 percent of the recovered pallets were sent to landfills or used in other ways (e.g. given away, burned, or used as wood fuel).

Approximately 81 percent (366 million board feet) of the parts from pallets that were disassembled were used to rebuild pallets. An additional 13 percent of the parts from un-nailed pallets were ground or chipped. The remaining parts

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Study At A Glance

- In 1995, an estimated 171 million pallets were recovered by the pallet industry. This represents a 105 percent increase from 1993 and a 160 percent increase from 1992.
- The estimated wood volume of recovered pallets increased 111 percent from 1993 to 1995, and 154 percent from 1992 to 1995.
- Of the 2.61 billion board feet of pallet material recovered in 1995, 2.28 billion board feet (87 percent) were used again in a pallet.
- In 1995, the pallet and container industry used an estimated 6.31 billion board feet of new solid wood (lumber, cants, and parts).
- In 1995, therefore, the ratio of recycled to new pallet material was 0.36, or 36 percent. Compared to the 1993 ratio, 0.15, this indicates a substantial increase in pallet recovery.

Another way to view the impact of pallet recovery and re-use is to investigate the mix of new and recovered wood used in pallets and changes in this mix over the study period. With a few assumptions, these data may be estimated from the study results. Total wood use for pallets increased from 1992-1995. However, new wood use declined from 87 percent of the total in 1992 to 70 percent in 1995. The increasing total was attributable to increases in the use of recovered pallets and pallet wood – increases that more than compensated for decreasing new wood use.

(continued from page 63)

were used for fuel, sent to landfills, or given away.

An estimated 43 percent of the volume of wood that was ground or chipped was used as fuel in 1995. Approximately 19 percent of this material was used as landscape mulch and 7 percent was used as animal bedding. In 1993, approximately 42 percent of ground material was used for fuel, 19 percent was used for mulch, and 7 percent was used for animal bedding. Finally, 4 percent of the wood from ground or chipped pallets were used for fiber-based products (e.g., hardboard, fiberboard) in 1995.

New wood use and recovery at this is not the complete story. The remainder involves – among others – the recovery and characterization of pallets at landfills and recovery for high added value products, such as flooring. The Center for Forest Products Marketing and Management and the Southern Research Station are collaborating to provide information concerning these missing pieces of the total recycling story.

(Editor's Note: The study discussed in this article is one of a series conducted by the Center for Forest Products Marketing and Management at Virginia Tech in collaboration with the Southern Research Station of the Forest Service

and with the help of the scientists at the Forestry Sciences Laboratory, USDA-Forest Service, Princeton, W. Va. In addition to the pallet industry, the studies also track wood use changes in the furniture and cabinet industries.

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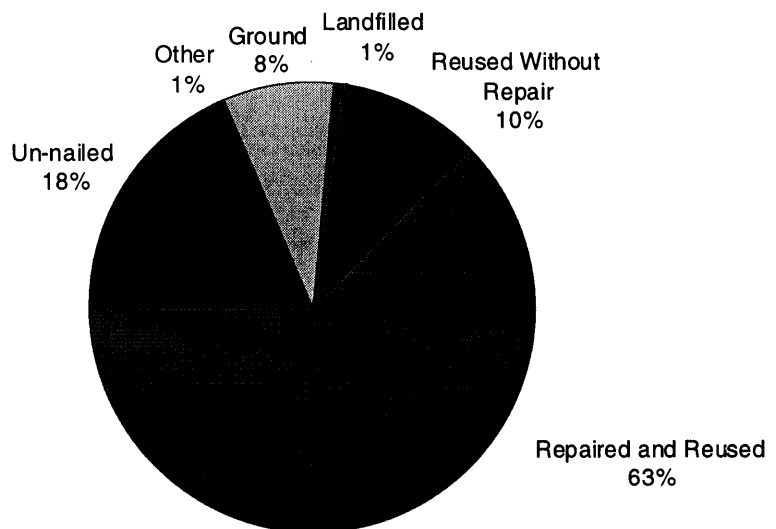


Figure 4. Utilization of Pallets Recovered by the Pallet Industry in 1995.