

BUYERS ATTITUDES TOWARD THE PURCHASE OF TREATED SOLID WOOD PACKAGING

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ABSTRACT

Pallets and other solid wood packaging have carried insect and disease pests including the Asian longhorned beetle and pine wood nematode. To reduce the spread of insects and disease, international standards requiring the treatment of pallets and other solid wood packaging will be implemented in 2004. The standards may create challenges for pallet producers with repercussions affecting the hardwood lumber industry, private woodland owners, and forest-based communities. It has been suggested that impacts may include increased pallet prices, reduced use of low quality hardwood lumber, and substitution of solid wood packaging by other materials. A shift away from the use of wood may affect timber sales by reducing the market for low quality trees. In order to gain a better understanding of packaging buyers' needs and attitudes, a survey of 1,200 exporting companies was conducted. Pallets used in export represent approximately 2 to 2.5% of the annual U.S. pallet production. Pallet strength and price are the most important attributes associated with pallets used for export. Many respondents to the survey were not aware of the new phytosanitary standards. These respondents do not anticipate the new treatment standards to result in increased purchasing of substitute materials. As more buyers become aware of the standards, buying behavior should be monitored.

INTRODUCTION

Pallets and other solid wood packaging have carried insect and disease pests including the Asian longhorned beetle and pine wood nematode (Hicks 2003). To reduce the spread of pests, on March 15, 2002 an international standard governing the export of all non-manufactured wood packing material was adopted by the Interim Commission on Phytosanitary Measures, the governing body of the International Plant Protection Convention (IPPC). Concern about how packaging customers might react to the standard and the impact on the hardwood lumber industry prompted a survey of exporters.

Solid Wood Packaging and Treatment Requirements

The United States is one of 128 countries that have agreed to require all solid wood packaging used in export to be subject to treatment. The standard affects only non-manufactured wood pallets or packaging. It does not affect pallets or crates made entirely of manufactured wood products, such as plywood, composite, waferboards, oriented strand boards, and structural particle boards, collectively known as structural wood panels.

Under the standard, all wood packaging, both coniferous and non-coniferous, must be either heat-treated or fumigated with methyl bromide. For heat treatment, wood packaging material must be heated so that the internal temperature of the largest piece

of wood reach and retain a temperature of 56°C for a minimum of 30 minutes. For fumigation, wood packaging material must be fumigated with methyl bromide according to a treatment schedule published in the IPPC standards. To show that the packaging has been treated it must be stamped on at least two sides with a certification stamp (Fig. 1).

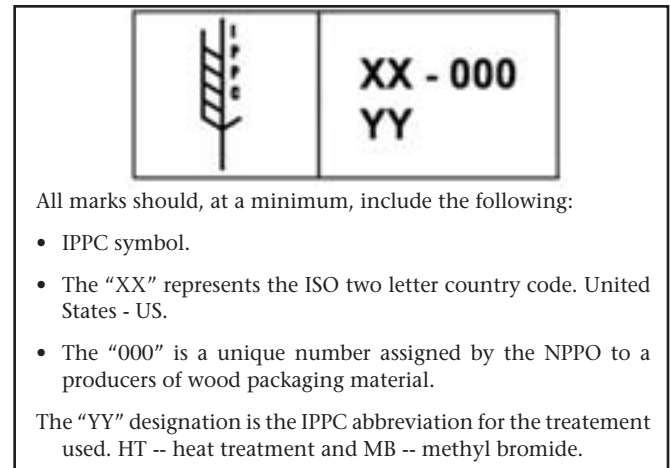


Figure 1 -- IPPC Certification Stamp

National Plant Protection Organizations

Each of the 128 signatory nations has a National Plant Protection Organization (NPPO) that is responsible for implementing the standards for treatment and inspecting incoming shipments. In the United States the NPPO is the USDA Animal and Plant Health Inspection Agency (APHIS). APHIS has a memorandum of understanding with the American Lumber Standards Committee (ALSC) and the National Wooden Pallet and Container Association (NWPCA) to conduct the certification program. ALSC has contracts with 11 private agencies for certification and auditing of facilities engaged in the heat treatment of solid wood packaging. The National Wooden Pallet and Container Association has contracts with three agencies for the certification and auditing of facilities engaged in fumigation of solid wood packaging. Lists of the accrediting agencies may be found at the websites of the ALSC: <http://www.alsc.org> and NWPCA: <http://www.nwpc.com>

National Plant Protection Organizations (NPPOs) have the responsibility for implementing the IPPC standards within their own countries. Therefore, each country will have its own implementation dates. In the United States, implementation will begin in April or May 2004. To locate information on the dates of implementation the IPPC has a website <http://www.ippc.int>

The Pallet Industry in the United States

Pallets are a universal and critical part of product transportation in the United States economy. The ten most common commodities transported on wood pallets are machinery, electrical machinery, optic and medical instruments, woven apparel, knit apparel, furniture and bedding, toys and sports equipment, plastic,

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footwear, and leather goods (USDA APHIS 2003). Forty percent of all hardwood lumber produced in the United States is made into solid wood packaging. The pallet industry uses approximately 4.5 billion board feet of hardwood lumber and 1.8 billion board feet of softwood lumber for the production of 400 to 500 million solid wood pallets annually (North Carolina DNR 2003) (Bush and Araman 1997) (USDA APHIS 2003). It is estimated that approximately 171 million of these pallets are recycled or used as fuel (Hekkert, Joosten, Worrell 1998) (Reddy and others 1997). This reduces the need for the use of 2.6 billion board feet of lumber. (Scheerer, Bush and West 1996). The USDA APHIS (2003) reported that total number of pallets used in export was 10 million units or 2.5% of the total United States annual production of 400 to 500 million pallets.

Alternatives to Solid Wood Pallets

Wooden pallets are often durable enough to be reused many times, either directly or with minor repair. The pallet reuse and refurbishing industry has grown dramatically during the last decade. Large third-party pallet management companies have also emerged with sophisticated systems for recovering and reusing wooden pallets. In addition, some packaging customers are seeking source reduction alternatives such as no pallet shipping systems. Others are switching to pallets made from plastic to take advantage of their extended durability or switching to corrugated pallets due to their low cost. Since 1998 use of composite, manufactured wood pallets or plastic pallets has risen from 2% market share to around 10% today. As these trends grow, the need for wood pallets is likely to remain flat or decrease.

METHODOLOGY

To learn about purchasers' attitudes toward treatment of solid wood packaging a survey of 1,200 exporters was conducted in September 2003. The primary objectives of this research are as follows:

- Gain insight into the role of wooden pallets in the international supply chain (i.e. amount of wooden packaging material used for export).
- Explore competition from alternative materials (e.g. plastic/metal) and channels (e.g. pallet management and/or leasing companies) potentially benefiting from this standard.
- Better understand customer requirements surrounding treatment methods outlined in the new standards influencing future business strategy.
- Examine customer differences around the purchase of wood packing materials and potentially identify export market segments.

Based on a review of the relevant literature, a mail survey was developed and administered from September to November 2003. The population of interest included all U.S. manufacturers who are engaged in exporting activities. A sample of the major U.S. exporters was developed from lists of major exporters from the 2003 Directory of U.S. Exporters, published by Commonwealth Business Media.

The sample consisted of the top 600 exporters of

containers (20' in length), and a random sample of 600 of those remaining firms that shipped more than 20 containers a year. Container shipments were utilized as a measure of size instead of tonnage, because this eliminates those firms who may ship bulk material. This information was cross-referenced with the top 100 exporters listed by the U.S. Port Authority. Where possible, names of contacts were used. If a name was not available, the questionnaire was addressed to the shipping manager at the known address. Two surveys and a post card were mailed to all addresses, phone calls were made to all non-respondents and the survey faxed to those who indicated they would respond. After adjusting for companies that indicated they did not use packaging materials, the total sample size was 1,026. The response rate was 3.5%. Due to the low response, results should be interpreted as qualitative in nature.

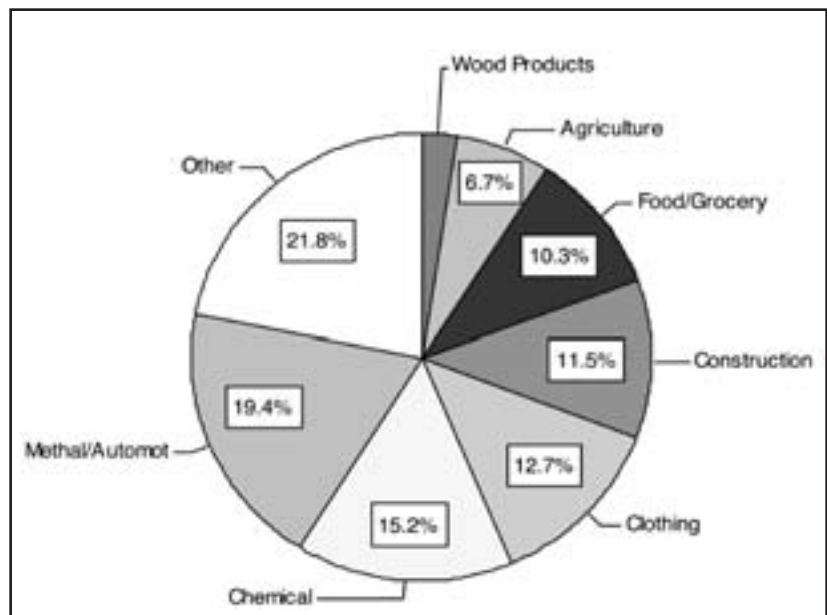


Figure 2 -- Respondents Profile

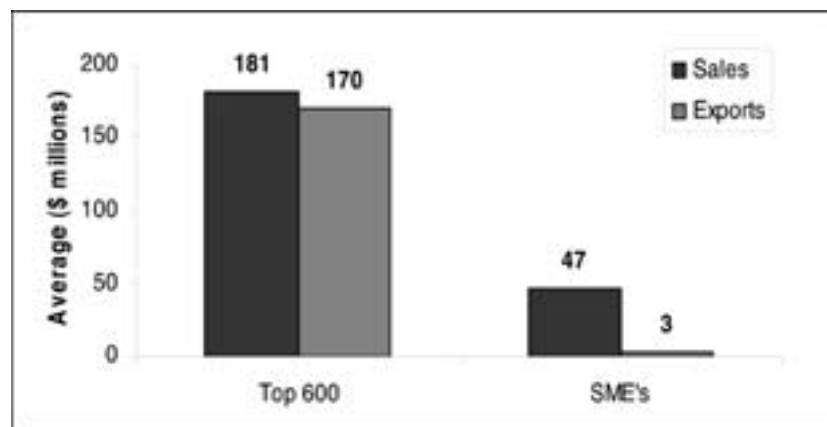


Figure 3 -- \$ Sales compared to \$ Export for Large and Small Exporters

RESULTS

Respondents to the survey represent a wide variety of industries (Fig. 2). The sample was divided into two groups of companies: a) Top 600 Exporters and b) Small and Medium Exporters (SME's). Exporting is a major part of the top exporters business. For SME's, the export business is only 6% of their total sales (Fig. 3).

Pallets and other Packaging Products

The use of pallets, accounts for nearly 80% of all packaging used for both small and large exporters. Companies also indicated that on average, 90% of the pallets used are made of solid wood.

Pallet Characteristics and Purchaser Preferences

Respondents were asked to rate 18 attributes about pallets by their importance and performance. Pallet strength, price, and treatment to meet standards were ranked by respondents as the most important attributes. The ability to lease or reuse pallets was not believed to be important.

Perceptions of the Impact of the International Phytosanitary Standards

Statements regarding the possible impact of the new International Phytosanitary Standards were rated by respondents. Respondents reported that the impact of the IPPC standards would not result in:

1. the purchase of more non-wood pallets
2. seeking out new non-wood suppliers
3. leasing more packaging materials or
4. investigating the use non-wood pallets.

DISCUSSION

The USDA APHIS (2003) reported that impact of all exports using alternative packaging materials on the United States lumber industry would amount to a 1% reduction in demand for both hardwood and softwood lumber. As previously stated, 70% of the pallets in use are hardwoods and approximately 40% of the hardwood timber harvested in the United States is used to produce these pallets (North Carolina DNR 2003) (Bush and Araman 1997). The USDA APHIS (2003) also reported that the number of pallets purchased annually for export is 2.5% of the total pallet production estimated at between 400 and 500 million pallets annually. Since 15.4 million board feet of lumber is used to produce 1 million pallets, the use of non-wood materials as a substitute for solid wood packaging used in export could mean a reduction in the use of between 154 and 193 million board feet of lumber each year. Impacts could be larger if the small exporters which utilize a large number of pallets and other solid wood packaging domestically decided not to maintain two inventories of pallets and substituted non-solid wood packaging for their domestic pallet needs.

The National Wooden Pallet and Container Association, Pallet Enterprise, USDA-Animal Plant Health Inspection Service, USDA-Forest Service Wood Resource Educational Center and the Limestone Bluffs Resource Conservation and Development Area and others have made efforts to make pallet manufacturers aware of the standards for treatment of solid wood packaging (USDA Forest Service 2003). Therefore most pallet manufacturers are aware of the need to treat solid wood packaging used in export. Packaging customers on the other hand are not aware of the new standards and impending requirements as evidenced from the low response rate to this survey and comments received. This situation provides pallet manufacturers with an opportunity to satisfy packaging customers' needs and to maintain market share. If pallet

manufacturers can not satisfy its customers they will lose market share to competing packaging products.

The survey results indicated that pallet customers prefer wood, therefore substitution of solid wood packaging with alternatives such as manufactured wood, plastic or does not appear likely or if it occurs it is likely to be slow. Two reasons pallet customers are likely to continue purchasing solid wood packaging include 1) the low cost of solid wood relative to substitutes, and 2) the lack of interest in leasing or recovery of packaging material. The leasing and recovery of pallets within a closed system would make more expensive alternatives to solid wood packaging more attractive. Pallet customers have demonstrated their satisfaction with wood by not switching to other materials for use in trade when solid wood packaging treatment requirements were imposed in 1998 for exports and imports with China. In addition, there are currently insufficient quantities of alternatives of alternative materials available to meet the demand for packaging without using solid wood. (USDA APHIS 2003)

CONCLUSION

Although concerns have been expressed about impacts to the pallet industry, hardwood lumber suppliers and hardwood timber sales, respondents to the survey indicated that it would be unlikely that they would seek out alternative materials for shipping. This conclusion is made based on current packaging customer's knowledge of the standards which is low. Pallet manufacturers, however, are aware of the standards and are in a good position to satisfy the packaging needs of their exporting customers. To maintain market share, pallet manufacturers will need to be proactive in helping their customers avoid frustrated shipments. Therefore, pallet manufacturers will continue to need the latest information about standard implementation.

The largest risk to the new production of solid wood packaging is from imported treated wood packaging or from packaging that is used for import and then refurbished and reused. Although packaging customers are not interested in reusing the pallets they use to export, pallets that are used in import get reused and reconditioned. Since reconditioned pallets are required to be re-treated and re-stamped, pallet manufacturers are well positioned to strengthen or expand their business in the area of reconditioning and retreating solid wood packaging.

Many respondents to the survey were not aware of the standards. These respondents do not anticipate the standards to result in increased purchasing of substitute materials. As more packaging customers learn about the standards buying behavior may change. Given current knowledge it is likely that solid wood packaging will remain in use and shifts to alternatives if any will be slow provided the following conditions are met: 1) solid wood packaging must continue to be the low cost alternative, 2) new requirements are not implemented that require exporters to use alternative materials, and 3) packaging manufacturers continue to assist exporters overcome the confusion regarding treatment regulations. As more buyers become aware of the standards buying behavior should continue to be monitored.

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