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Engineered wood products and their potential impacts on forest landowners in the South

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"Engineered" Wood Products and Their Potential Impact on Forest Landowners in the South

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Change is inevitable, except from a vending machine. This "bumper sticker" saying relates well to recent developments in forest products and their potential impact on forest landowners in the South. Change is inevitable - and very important changes are occurring today in how the trees we grow are processed and used in the U.S. and around the world. These changes have the potential for very dramatic changes in timber markets in the U.S. South, where there are millions of acres of commercial forestland. Changes in timber markets, of course, affect landowners' profits from timber growing, and they may therefore impact our objectives for growing timber and our management strategies for reaching those objectives.

What are "engineered" wood products?

"Engineered" wood products come in many forms, but what they have in common is that wood raw materials are cut, peeled, crushed, shaved or otherwise broken down into smaller pieces, which are then reconstituted into usable products. Most of these products can be grouped into two categories, panel products and "structural lumber composites." Panel products that are widely produced and used today include plywood, particleboard, oriented strand board (OSB), and fiberboards. Fiberboards include insulation board, medium-density fiberboard, and high-density "hardboards." Lumber substitutes, or "structural lumber composites," include finger-jointed lumber, as well as products such as laminated veneer lumber (LVL), parallel strand lumber (PSL) made from crushed veneer, and oriented strand lumber (OSL). Brand new lumber substitutes are also being developed and tested, including a product called Tim Tek™; a pilot plant to demonstrate the Tim Tek™ process will soon be located at Mississippi State University's Department of Forest Products. The Tim Tek™ product is exciting because relatively small pine trees can be used - the product therefore has potential for providing a new market for pine plantation thinnings.

For many engineered wood products, both the raw material and the processing conditions are designed and controlled to yield specific performance characteristics (Hammett and Youngs 2002). Because of their "engineered" nature, these products can be designed and produced with specific density characteristics, as well as specific strength, durability, and other features that are more uniform and predictable, compared to the highly variable characteristics of natural wood fibers and traditional solid wood products. Another big advantage of engineered wood products, of course, is that they are more adaptable to the raw material source. In general, smaller trees can be used, as well as species of trees that are less desirable for processing into solid wood products.

Housing is the largest single market for wood-based materials in the U.S. today, and if you examine wood frame houses under construction today you'll notice many engineered wood products that were not in common use just a few years ago. For example, OSB has gained very broad acceptance in recent years and has replaced plywood in most sheathing and decking applications. OSB production now rivals plywood production in the volume produced in North America (Sellers 2001). Wood "I-beams" are another example - OSB with LVL or solid wood flanges; wood I-beams or "I-joists" now comprise about 45 percent of the flooring joist market (Schuler 2002), an important market where solid-wood 2x10s have traditionally been used. Today's home may also include large laminated beams for roof spans, as well as truss systems that were not in wide use until recent years. Trusses make more effective use of relatively small, or lower grade traditional wood products like 2x4s and 2x6s, than the larger or higher quality boards that would otherwise be required in roofing systems. Today's homes may also include finger-jointed lumber, as well as composites made from combining wood fiber with non-wood materials like plastic and overlays.

The "bottom line" is that in the housing market and in other very important markets for forest products, "engineered" wood materials are gaining in market share and importance each year.

How will "engineered" wood products affect forest landowners in the South?

Engineered wood products have the potential to dramatically change timber markets in the southern U.S. In general, as engineered wood products become more widely used, new processing facilities may open that will increase demand for smaller trees or species that are currently in low demand, while other facilities and markets may be adversely affected.

An example of market change that southern forest landowners should consider from the recent past is the impact on many

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local timber markets of the increased use of OSB as a substitute for plywood, particularly in softwood applications. OSB has gained rapid market share in the last 20 years, primarily at the expense of plywood, and this change has had a dramatic impact on many southern forest landowners. In areas where softwood plywood plants have closed, for example, the demand for pine peeler logs has declined dramatically, while in areas where OSB mills have opened, demand for smaller pines has increased significantly.

As structural lumber composite products like LVL, PSL, OSL, and other engineered composites become more widely produced and used by builders and other primary users, timber markets in many areas of the South may be greatly affected. Just as in the case of OSB and plywood, in general, structural lumber composites should have a positive impact on markets for smaller trees and for species that are currently underutilized. They should therefore provide better markets for pine plantation thinnings, and in some cases they also have the potential to change the final product objective of the plantation - from "sawtimber," for example, to shorter-rotation, smaller final product trees whose destination for processing may be a composite product mill. Management practices like bedding, competition control, and fertilization will also need to be re-evaluated for their profitability and attractiveness as final product markets change for plantation-grown pines.

Engineered wood products that substitute for lumber, as well as I-joists, finger-jointed lumber, truss systems, laminated beams and other new wood products should increase small timber demand, a very welcome change in most areas of the South today, particularly those areas where pulpwood demand and prices have decreased significantly in recent years. Increased demand for smaller pines may also shorten rotations, resulting in faster "turnover" of the money invested in planting and stand establishment. All else equal, shorter rotations would also mean better habitat for many game species like white-tailed deer, since pine stands would be regenerated at a younger age, providing increased browse for many wildlife species

Finally, although we don't know what the future holds, we do know that change is inevitable. Winston Churchill provided good advice when he said *"Take change by the hand, or it will take you by the throat."* The better we understand changes in wood products technologies and markets, the better we can take these changes by the hand, becoming better positioned in making timberland investment decisions for a profitable future.