



The National Fire Plan

Hazardous Fuel Reduction: Producing Three-Dimensional Structural Products from Underutilized Trees



The goal of this research project is to develop economically viable processes and products that can utilize forest undergrowth and whole tree trimmings from logging operations. Thinning or clearing of these components can be encouraged in the private sector, and costs to the federal government for fire mitigation can be minimized.

In a partnership among the Forest Products Laboratory (Madison, WI), Southern Research Station (Pineville, LA), Bolton-Emerson Co. (Lawrence, MA), and Genesis Laboratories, Inc. (Batavia, IL), several technologies are being combined to determine if whole tree material can be utilized to produce value-added structural panel products:

- Whole tree material from Bighorn National Forest in Wyoming and from Wyoming State Forest lands will be fiberized using special equipment.
- Fiber-bonding potential of the fiberized material will be analyzed using near-infra-red spectroscopy and other fiber analysis techniques.
- Fiberized material will be formed into three-dimensional structural shapes and press-dried to produce high-density structural panels.
- Panels will be tested to determine the physical and mechanical properties, and potential product applications in the furniture and housing markets will be determined.

When the structural core is bonded to exterior skins, a novel three-dimensional sandwich panel is formed that exhibits a high level of strength and stiffness. The technology has promising uses in the construction of pallets, bulk bins, heavy duty boxes, shipping containers, packaging supports, wall panels, roof panels, cement forms, partitions, displays, reels, desks, caskets, shelves, tables, and doors.



Relative core thickness of Trusscore panels could be around $\frac{3}{4}$ inch.



Finished thickness of corrugated panels could be around $1\frac{1}{2}$ inches.