

# National Fire Plan

## Producing Three-Dimensional Structural Products from Underutilized Trees

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Wyoming - The goal of this research project is to develop economically viable processes and products that utilize forest undergrowth and tree trimmings from logging operations. When thinning or clearing of these components is encouraged in the private sector, costs to the federal government for fire mitigation are minimized. Funding for this project was provided by the National Fire Plan as a way to develop ways to make thinning of forests for hazardous fuels reduction more economically feasible.

In a partnership among the Forest Products Laboratory (Madison, Wis.), Southern Research Station (Pineville, Lou.), Bolton-Emerson Co. (Lawrence, Mass.), and Genesis Laboratories, Inc. (Batavia, Ill.), 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 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. 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  $1\frac{1}{2}$  inch.

For additional information on the National Fire Plan, visit [www.fireplan.gov](http://www.fireplan.gov)