Biochemical Method to Control Post-Harvest Wood Color

A chemical-based method controls post-harvest wood physiology to prevent discoloration in light woods or induce dark coloration in woods like black walnut, reducing processing time and eliminating steam treatment.

When producing wood lumber and veneers such as black walnut, the scarcity and dark, rich colors of the woods result in high market values for the end product. Likewise, woods such as yellow poplar and hard maples have high market values due to the lightness of their color. Unfortunately, the cost to handle and process the woods in order to obtain the desired result is also high. For example, to darken woods such as black walnut, the cut trees must be maintained wet and then steamed or cooked for long periods in order to soften and facilitate the process of "color maturation" for the wood. The wood must then remain wet for 24 to 48 hours for the wood to completely darken or lighten.

Purdue University researchers have developed a chemical based method to control the post-harvest physiology of wood and lumber. Damage induced biochemical signals that lead to undesirable wood coloration changes can be induced or inhibited during processing that takes place after field harvesting. The technology can prevent the discoloration of white wood lumber, such as yellow poplar and hard maples, or can induce dark coloration in woods, such as black walnut.

Advantages:

-Post-harvest process can be readily included in saw mill, lumber sorting, or veneer slicing operations

-In-line process provides shorter processing times with lower inventory levels while eliminating steam chamber equipment and off-line batch processing

-Low setup costs requiring relatively simple machinery

-Simple control systems lead to low operating costs

Technology ID

64463

Category

Agriculture, Nutrition, & AgTech/Precision Agriculture & Smart Farming
Chemicals & Advanced Materials/Specialty & Performance Chemicals
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Authors

Daniel Cassens
D. Marshall Porterfield

View online

Potential Applications:

-Agricultural industry

-Wood processing

-Chemical analysis

TRL: 6

Intellectual Property:

Provisional-Patent, 2005-11-22, United States | Provisional-Patent, 2006-11-02, United States | Utility Patent, 2007-11-02, United States

Keywords: Post-harvest wood treatment, chemical wood color control, wood discoloration prevention, wood color maturation, accelerated wood darkening, wood lumber processing, veneer slicing operations, sawmill color treatment, wood physiology control, in-line wood processing, Agbiotech, Agriculture, Biotechnology, Chemical Processing, Chemistry and Chemical Analysis, Horticulture