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## R&D Works – March 2015

Welcome to our March edition of the R&D Works newsletter.

This month our stories include the use of a fungal biocontrol in the US to combat mountain pine beetle in Arizona; prefabricated timber building solutions such as the high-rise apartment building concept design Woodscraper II; a study on adhesives and insulating foams derived from softwood bark tannins; research into biodegradable wood-fibre bottles; and an FWPA funded project that incorporates LiDAR sourced information into softwood plantation management production systems.

I do hope you enjoy reading about these exciting research projects.

Chris Lafferty  
R&D Manager  
FWPA

## MAIN NEWS

### Cost benefits for Laser scanned softwood plantations

Assessing and measuring the growth of plantations is vital if growers are to get the best from the investment in their trees. Previous FWPA research has



identified that using aircraft mounted, laser scanning equipment (LiDAR) is an effective way to manage estates; however, incorporating the LiDAR sourced information into plantation management production systems is an opportunity for further efficiencies.

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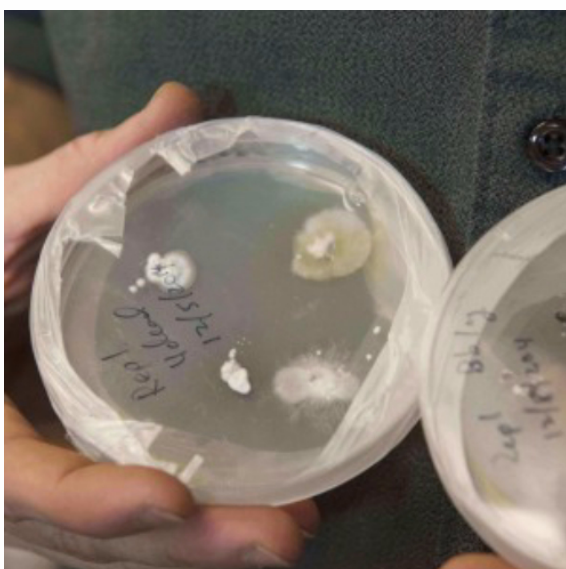
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## Prefab building makes for sustainable homes of all sizes

Prefab building techniques are being used to develop sustainable dwelling places at both ends of the size scale. As the market becomes increasingly mindful of environmental issues, prefabricated building solutions are acquiring greater prominence because of their heightened efficiency and convenience.

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## Scientist uses fungus to destroy bark beetles

As Arizona and other US states face ongoing drought conditions, the region's pine forests are becoming more vulnerable to bark beetles, which attack and kill stressed trees, increasing wildfire danger. Northern Arizona University (NAU) researcher Rich Hofstetter is working with a fungus that kills the beetles

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# FOREST GROWING



## High tech monitoring of old growth forests

Drones, laser scanners, planes and sharp shooters have been put to work in the Tasmanian forest to better understand the environmental effects of forest management regimes.

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## Nutrient pollution damages streams in ways previously unknown

An important food resource has been disappearing from streams without anyone noticing until now.

In a new study, a team of researchers led by University of Georgia (UGA) ecologists reports that nutrient pollution causes a significant loss of forest-derived carbon from stream ecosystems, reducing the ability of streams to support aquatic life.

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## NEW PRODUCT INNOVATIONS

### Adhesives and insulating foams from softwood bark tannins

In collaboration with its European partners, VTT Technical Research Centre of Finland developed tannin extraction from softwood bark. This process creates at least 130kg of crude

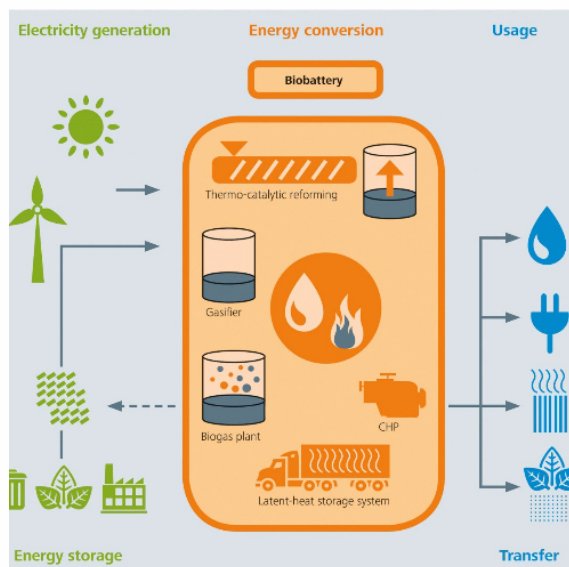




tannin powder from one tonne of dry wood bark, leaving 87% of the original bark mass available for incineration.

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## MARKETS



### Modular biobattery plant turns a wide range of biomass into energy

Researchers at the Fraunhofer Institute for Environmental, Energy and Safety Technology have developed a "biobattery" in the form of a highly efficient biogas plant that can turn raw materials like straw, scrap wood and sludge into a variety of useful energy sources.

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## TIMBER CONSTRUCTION AND DESIGN

### Exploring construction using whole trees

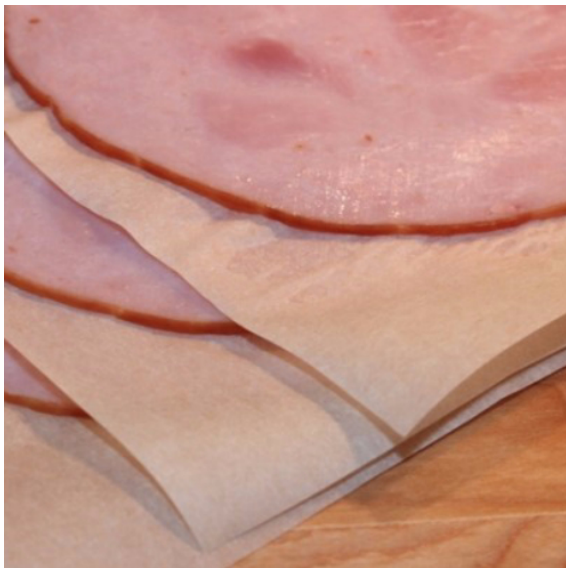
Researchers at the Forest Products Laboratory (FPL) are testing trusses,



which provide structural support for buildings, made from whole trees. One such truss had a clear span of 16.7 metres and was made from low-value red pine logs.

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## OTHER



### Smart packaging to the rescue

Packaging is the front-line warrior in today's efforts to improve food safety with effective, environmentally sound products.

What if technology could guarantee that the package of cold cuts you just bought were free from Listeria and other harmful bacteria?

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### The Green Fiber Bottle Project Better World in the Making

**KNOCK ON WOOD**  
A biobased bottle made from sustainably sourced wood-fiber.

**AS GOOD AS GREEN**  
Strong, durable material, 100% compliant with the strictest food and beverage regulations.

**IN THE NAME OF BEER LOVE**  
Will contribute to spreading sustainable beer love everywhere in partnership with ecoXpac.

**ZERO WASTE**  
Will be 100% biodegradable and generate 0% waste.

### Beer in biodegradable wood-fibre bottle

All safety issues aside, it appears timber and beer goes together in ways a thirsty tree cutter on a hot day never envisioned.

In the context of its participation in a panel on Waste-less Supply at the World Economic Forum in Davos, beer company Carlsberg announced a ground-breaking agreement to develop the world's first fully biodegradable wood-fibre bottle for beverages.

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## VTT's energy-harvesting "tree" generates electricity from multiple sources

Scientists at the VTT Technical Centre of Finland (VTT) have developed a prototype of a tree that harvests solar energy from its surroundings, whether indoors or outdoors. The prototype stores the solar energy and turns it into electricity to power small devices such as mobile phones, humidifiers, thermometers and LED light bulbs. The technology can also be used to harvest kinetic energy from the environment.

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