

NRRI Mission:

Deliver research solutions to balance our economy, resources and environment for resilient communities.

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Oil absorbent from corn byproduct wins international award

A product developed at NRRI and licensed to Clean Plus, Inc. in Concord, Minn., received international recognition in March.

Drip Trap is an oil absorbing product made from granulated corn harvest byproduct that absorbs 5.4 times more oil than clay-based absorbents and is 45 percent less expensive.

Clean Plus, Inc. was selected as one of three for the 2018 Bio-Based Product of the Year award at the annual World Bio Market 2018 conference in Amsterdam on March 20.

Company President Matt Coy says the "biggest challenge now is keeping up with the demand."



ARCHIVE PHOTO: NRRI's Bob Vatalaro, left, and CPI Pres. Matt Coy develop first iteration Drip Trap at NRRI in 2007.



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Sustainability program makes every day Earth Day

NRRRI started with a recycled building. In the mid-1980s, the University transformed an abandoned air force command bunker into an innovative research institute.

But the inefficiencies of this old building are a challenge. How can NRRI promote sustainability in all other arenas, except its own? It can't. And that's why a staff-powered Sustainability@NRRI program began back in 2012. Its goal: to reduce the staff and building's environmental footprint.

The program is managed by Tiffany Sprague whose college studies in biology with a minor in environmental management makes this job an especially good fit. "I enjoy getting emails from fellow staff members asking how to properly dispose of X, Y or Z," she said. "I even get asked about disposing personal items, which shows me that our staff really cares."

The program has four main goals: 1) Reduce operation costs, 2) Decrease waste, 3) Demonstrate green technologies, and 4) Support staff in making sustainable decisions.

Offering employees opportunities to compost, recycle paper and plastic, dispose of batteries, etc., is just a start. Sprague also helps them reduce waste produced at meetings and other staff gatherings.

These efforts have resulted in composting 8,200 pounds of food and plant debris and recycling 13,000 pounds of white paper since 2013.

"While it makes me happy to know we kept 160 pounds of plastic bags from the landfill last year, it would be great if we eliminate the use of plastic altogether," said Sprague.

In this role, she's learned that the field of sustainability is fast-paced and still evolving. She tries out new processes to keep up with the ever-



Sustainability@NRRI Coordinator Tiffany Sprague enjoys reducing staff waste.

changing rules of recycling. For instance, Verso Corp., the local paper company, has stopped taking white paper for recycling so sorting efforts will change. Sprague also works with researchers to incorporate sustainability practices into their Standard Operating Procedures and field work.

NRRI's large greenhouse is getting special attention now to make it more energy efficient, reduce the cost to heat it and demonstrate green technologies.

Other goals include developing a sustainability plan for NRRI's labs in Coleraine, Minn., audit the water use at the Duluth facility, and continue community collaborations.

"This job is fun because I get a lot of great ideas from our researchers and leaders across the institute," added Sprague.

NRRI tests modified wood in Hawaii's wet, tropical climate

Warm ocean breezes, dazzling sunlight and fragrant foliage make Hawaii a vacationer's paradise. But the town of Hilo, on the east side of The Big Island, might be a bit too tropical. Hilo is hot, rainy and muggy. Temps often reach into the 90s Fahrenheit with humidity hovering around 80 percent. Average annual rainfall is 127 inches.

So while that combination might send people into air conditioned comfort, the extreme environment is very hard on exposed wood products. It warps. It rots. And that makes Hilo the perfect place to test thermally modified wood. If this "cooked" wood can stand up to extreme conditions, perhaps it will make a long-lasting, durable picnic table, or even a dock.

With funding from the U.S. Forest Service Wood Education and Resource Center, NRRI is testing wood from underutilized tree species – balsam fir, eastern hemlock, yellow poplar, aspen, red maple and white ash. The goal of the research is to make the performance data on these species of thermally modified wood publicly available to open up new markets.

"Balsam fir and eastern hemlock, especially, are considered problematic species because they often grow in high density stands or aren't being harvested because the markets aren't there," said NRRI Scientist Matt Aro, project co-leader. "This can ultimately lead to reduced forest health and dangerous fire conditions."

Michigan Technological University has renowned expertise – as well as the Hilo location – for this extreme testing. So with Michigan Tech on-site to gather data, NRRI shipped off wood thermally modified under two conditions, along with unaltered wood for comparison. The Hilo evaluations will take place over three years, simulating varying levels of outdoor exposure following American Wood Protection Association guidelines.

With one year of results just in, Aro is pretty excited about what he's learning.

Minnesota's low value wood species, thermally modified, resisted decay in the exposed elements as well as Southern pine treated with ACQ, or Alkaline Copper Quaternary, a chemical treatment with leaching potential.



NRRI Researcher Sue French takes a moment to enjoy Hilo, Hawaii.

"This is a big finding," said Aro.

"Thermal modification is a chemical-free process, so this is a pretty big deal."

The hurdle to integrating thermally modified wood options into the wood products market in the U.S. is lack of data, as stated in a recent article in *Hardwood Floors*, the magazine of the National Wood Flooring Association.

According to the author Hal Mitchell: "Each species and thickness requires a unique treatment temperature and duration to achieve proper modification levels. Entry barriers, lengthy learning curves, and lack of production standardization have kept American production relatively low."

The completed round of three years of exposure in Hilo will provide the physical performance data that Aro believes will bridge the knowledge gap for these plentiful tree species.

"NRRI is always looking for ways to increase the value obtained from our natural resources," he said. "By providing this data to our wood products industry, we can open doors to opportunities for our underutilized wood species."

