

NRRI Mission:

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

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From the Editor:

“Think global, mine local.”

The theme of the Society for Mining, Metallurgy & Exploration (SME) conference in Duluth, held last month, reflects a dynamic industry. There are both opportunities and challenges ahead.

NRRI’s mission has long been to help Minnesota’s mining industry address both.

This year, NRRI staff chaired or co-chaired many sessions, presented cutting-edge research and networked with 1,100 attendees. We remain committed to helping this industry stay forward-thinking and innovative.

Jane Breneman



NRRI Executive Director Rolf Weberg gives a closing plenary talk at SME 2017.

NRRI Leadership

Rolf Weberg, Executive Director

Initiative Directors:

Don Fosnacht, Renewable Energy
Elaine Hansen, Business & Entrepreneurial Support
George Host, Forest & Land
George Hudak, Mining, Minerals & Metallurgy
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Minnesota Value: Funds available for small, rural businesses

Entrepreneurs are important innovators and economic drivers. And that’s especially needed in Minnesota’s rural communities.

But starting and owning a small business is also challenging. Now, a collaborative effort, with a new infusion of funding from The Blandin Foundation, will provide business assistance with technical research and development to drive entrepreneurial success.

Successful applicants to the Business Assistance Fund will receive upfront planning and analysis assistance from Itasca Economic Development Corporation (IEDC) and hands-on technical research assistance from NRRI. Support of \$150,000 from The Blandin Foundation will target entrepreneurs in Itasca County, plus the rural communities of Hill City, Remer, Blackduck and Northome. Successful applicants would be awarded amounts in the \$500 – \$25,000 range, to be matched by the applicant.

According to NRRI Business Assistance Fund Manager Shima Hosseinpour, the key for interested applicants will be to show that their needs complement the expertise available at NRRI.

“The support businesses and entrepreneurs get from this grant will allow them to reach market faster, with less risk and less cost,” said Hosseinpour. NRRI’s staff of researchers and scientists put special emphasis on helping companies use their resources efficiently with less waste and higher value.

“This is an exciting partnership program that extends IEDC’s existing business assistance capabilities to include research



Shima Hosseinpour (right), Business Assistance Fund manager, enjoys working with clients to ensure their success. NRRI is committed to growing the Fund to meet the needs of many.

and development,” said Mark Zimmerman, IEDC president. “Our Small Business Development Center will help evaluate each business to make sure they are good candidates for this grant and will help them bring their product idea to market.”

NRRI has helped many regional businesses over its 30-plus years in Duluth and on the Iron Range. According to Larry Heggedahl, plant manager for Mat, Inc. in Floodwood, MN, partnering with NRRI is “priceless.” The company manufactures a line of erosion and revegetation products and has used NRRI’s expertise in natural fibers and materials to continue to innovate.

“We’ve exchanged a lot of in-kind services over the years for their assistance,” said Heggedahl. “It’s great to work with people who understand how materials work in specific applications.”

Lonza, Inc., in Cohasset produces a tree-based ingredient for a variety of products. This small company used NRRI expertise to find appropriate uses for wood waste and to reduce dust in the plant.

NRRI has laboratories and expertise in the areas of technology development, testing and analytical services; lean manufacturing and productivity training; environmental characterization, materials sourcing, business planning and much more.

Innovative Research: Expanding markets for low value softwoods

Balsam fir, red pine and tamarack are plentiful tree species in Minnesota. But since the closure of several paper machines and oriented strand board plants, plus the 2008 recession and slowing of construction and manufacturing, there’s been much less need for, and harvesting of, these softwoods.

This is both a problem and an opportunity. The problem is a loss of jobs in the vital forest products industry, the fifth largest manufacturing sector in Minnesota by employment. Reduced softwood harvest also makes forests more susceptible to wildfires and attack by pests.

The opportunity is there, however, to expand domestic markets for these and other softwoods with thermal modification technologies to improve the wood performance. With the right data, manufacturers could turn to thermally modified balsam fir for products like outdoor furniture and fiberboard, which could bolster the state’s forest products industry.

NRRI conducted small-scale biological durability testing on balsam fir to provide the needed data. To modify the wood, it was cooked in NRRI’s special test kiln at bread-baking temperatures, around 350oF. Then it was tested according to American Wood Protection Association E10 standards – subjecting it to common wood decay fungi and soil block decay testing.

The tests were a success. Compared with durable southern and ponderosa

pinus treated with a chemical preservative, the cooked balsam fir showed less decay.

But can Minnesota’s softwood species stand up to the ultimate long-term decay environment of Hilo, Hawaii? NRRI Research Program Manager Matt Aro set up a test site to find out.

“This is one of the most inhospitable places in the northern hemisphere for wood construction – very hot and humid,” said Aro. “This testing should show our local wood manufacturers that treated balsam fir has very high decay resistance, perhaps on par with traditional chemically-treated wood products.”

Minnesota Forest Products by the numbers:

\$17.8 Billion—Gross Sales
64,000—Total Employment Effect
10,865—Directly Employed
\$49,031—Annual Average Wage
\$458 Million—Total Annual State & Local Taxes Paid

