

How green is your roof? Sedum and other perennials make for an environmentally friendly option

By Rachel Kurowski, Special to the Beacon
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When visitors look through the floor-to-ceiling glass-paneled back wall of SIU-Edwardsville's engineering building, they can't miss the assortment of small green plants on a slab of black asphalt.

Plants for sale? Not exactly. Sedum is the common name for this ground cover, which also goes by the fancy names of immergranch, spurium and sexangulare. Researchers are testing the plants to see which are best suited to live on rooftops, a location where only the toughest of plants can survive.

Sedum, which feels like plastic, is a hardy plant that can survive extreme weather such as drought and hail. "You can walk on sedum without damaging it," said William Retzlaff, Ph.D., a professor in the environmental science program.

So why would people want to grow plants on their roofs? Environmental and economic benefits, primarily. Green roofs provide insulation and lower heating and cooling costs for a building; retain storm water, thus reducing the need for roof drainage systems; and stifle the urban "heat island" effect by absorbing carbon dioxide.

And St. Louis does, indeed, have a heat island effect. "You'll see storms coming in from the west, then they'll split to the north and south when they come to the city," explained Hunter Beckham of SWT Design, an environmentally conscious landscape architecture firm which designs green roofs in St. Louis.

Retzlaff and other faculty, graduate and undergraduate students, are members of the Green Roof Environmental Evaluation Network, or G.R.E.E.N., project at SIUE. The researchers measure several factors: How much water the plants can retain. Which species can survive long periods of heat. What type of medium -- rocks, archelyte or ev

HOW GREEN IS MY ROOF?



FROM G.R.E.E.N., SIUE

coal ashes -- best support the plants.

Retzlaff is looking into a partnership with AmerenUE to use the ashes from coal burned power plants for planting sedum. "Plants do well in these ashes, and Ameren wants to get rid of it," he explained.

This information benefits a growing number of organizations who want to install green roofs. "Our goal is to promote environmental technology," he said. "We want to help those in the green-roof industry solve problems and develop new products."

G.R.E.E.N. received a grant from the U.S. Environmental Protection Agency in 2006 to fund this research. Many materials have been donated, such as the aluminum modules that the sedum grows in. These were donated by Green Roof Blocks, a division of St. Louis Metalworks.

G.R.E.E.N. is not alone in researching the green roof industry; about seven other universities across the country are doing similar research, Retzlaff said. And our European friends across the pond are years ahead of Americans in this field, perhaps due to their history of thatched roofing, which dates back to the Middle Ages and provides many of the same benefits of today's green roofs.

"Most of the technology we employ here in the North American green roof industry, we learned from the Germans," said Kelly Lockett, president of Green Roof Blocks. Lockett studied green roof construction in Stuttgart, Germany, where they have been building green roofs for more than 40 years. The country has more than 50 square miles of green roof space and is adding five square miles a year, he said.

But the United States is making progress.

Because rooftops are not exactly visible from the street, many people may not be aware that green roofs are becoming more popular locally. Two of the eight projects receiving Regional Excellence Awards from the St. Louis Construction News and Review on June 19 were buildings with green roofs: the William A. Kerr Family Foundation building at 21 O'Fallon St. and a building at St. Louis Community College at Wildwood. Seven out of the eight projects receiving awards had a commitment to green construction.

The approximately 8,000-square-foot green roof at SLCC-Wildwood is the region's first

INNOVATION FROM THE TOP



Green Roof Block

green roof on a college building. The roof is one reason the campus received a Leadership in Energy and Environmental Design, or LEED, certificate from the U.S. Green Building Council. The council has a detailed rating system for building design, construction and operation. A green roof is just one way to earn points toward LEED certification.

The William A. Kerr Family Foundation building has won an award for green construction.

Right now, the major disadvantage of a green roof is the substantial dent it makes in the pocketbook. Installing a green roof costs from \$11 to \$25 more a square foot than a conventional roof, Retzlaff said. But, despite the initial higher upfront costs, green roofs produce long-term savings, such as reduced energy costs and longer roof life. "We feel operational savings of a green roof have a payback period," said Ken Kempf, manager of engineering and design for SLCC.

The Kerr Foundation's green roof was part of a 2006 renovation to the 150-year-old building, located on the north riverfront. The nonprofit provides financial support for charities, including funding for many environmental organizations. Green Roof Blocks installed modules to cover the 1,780-square foot roof. The building was the first in St. Louis to earn LEED's platinum certification, the highest level possible. In addition to environmental benefits and reduced energy costs, "it is hoped that the building will provide education to others about available green building technologies," said Dr. John Sweet, co-trustee of the foundation.

One green roof that St. Louisans can see without a bird's eye view from a skyscraper is the Orthwein Animal Nutrition Center at the St. Louis Zoo. Finished last summer, this unique building also received LEED certification.

The roof, designed by SWT Design, is covered in sedum, grasses and perennials. When visitors come to the building to view the preparation of meals for more than 800 species at the zoo, they can also view the roof because it is at a 10 percent slope.

As more projects spring up throughout this area, those in the industry can look north to Chicago for ideas on successfully "greening" a city's skyline: Chicago has led the list of top 10 green roof cities for the past four years, according to Green Roofs for Healthy Cities, a nonprofit association.

The windy city added 517, 633 square feet of green roofs in 2007, thanks in part to government incentives: Mayor Richard Daley and the Department of Environment started a program in 2005 to offer grants of \$5,000 to 20 applicants to install green roofs on commercial and residential buildings.

Other cities are jumping on board. Recently, New York City officials announced an incentive to build green roofs. Starting Jan. 1, those who install a green roof will be

eligible for a \$4.50 tax credit per square foot of green space.

St. Louis has no similar incentives. "I know of no incentives to St. Louis citizens at this time," said Kelly Lockett, president of Green Roof Blocks. St. Louisans paying for greener roofs are doing it "because of the statement about environmental stewardship a green roof makes" or because "they feel it's the right thing to do," he said. "The green roof industry has a long way to go, but we are well on our way."

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