$OPEN\ SPACES$ by april and erson



The Josephine P. & John L. Louis Foundation Green Roof Garden North at Chicago Botanic Garden.

On Higher Ground GREEN ROOFS FLOURISH WITH NUMEROUS REWARDS

ROM THE HANGING GARDENS of Babylon (500 B.C.) to the modern European green roof movement of the 1960s, green roofs offer unique spaces to cultivate food, native plants, and ornamental vegetation which benefit both people and pollinators.

RESERVE YOUR TICKETS IN ADVANCE

Every roof is different in terms of the weight it can hold, whether it's flat or pitched, and what its owner envisions. Extensive green roofs can be used on slopes 30°+, with growing media 2-6" deep, weighing 20-50 lbs./sq. ft. Without irrigation, extensive roofs typically consist of succulent sedums or native prairie plants requiring minimal maintenance. For flat roofs, intensive systems employ growing media 6-15" deep, weighing 80+ lbs./sq. ft. to accommodate crops, shrubs, and trees. Irrigation is generally recommended for higher maintenance intensive systems.

CHICAGO BOTANIC GARDEN LESSONS

For Chicago Botanic Garden (CBG) Plant Evaluation Manager Richard Hawke, the 16,000 sq. ft. Josephine P. & John L. Louis Foundation Green Roof Garden atop the Daniel F. and Ada L. Rice Plant Conservation Science Center started with 36,000 plants as a "fun [five-year] research project". Hawke explored the impact of 4", 6", and 8" soil depths combined with ornamental garden and native species. "The main goal of the project was to expand the palette of plants grown on green roofs," Hawke said.

After working with the Green Roof Garden for nearly 12 growing seasons, Hawke describes the ornamental garden (North) and the prairie (South) as maturing communities. Ornamental plants on the North Roof are pruned to prevent seeding except for one volunteer that is thriving. "The only plant I have not allowed to be removed from the North Roof is a bottle gentian, which has



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been growing and excelling there for three years in 8" of soil," shared Hawke. "On the South Roof, Canada columbine sprouted under the girders (in some shade)." Butterfly weed was successfully established by seed where transplants failed, and white false indigo surprised Hawke with its elegant flowers and nearly 3' height after five years.

MCCORMICK PLACE ROOFTOP SUCCESS

For ASM Global Savor's Vice President of Culinary, Doug Bradley, and CBG Operations Director for Windy City Harvest, Kelly Larsen, the intensive green roof on McCormick Place is a collaboration which provides transitional job training, gardens, and specialty foods. Its 60 crops include everything from roots to fruits, edible flowers, and leafy greens. Sixteen of these food crops are Ark of Taste heirloom species identified by the Slow Food Foundation for Biodiversity as foods that are endangered. "One crop that surprised us a lot last year was candy roaster squash," said Larsen, describing a harvest of hundreds of pounds of an heirloom winter squash historically cultivated by the Cherokee. Another surprising McCormick



Antennaria dioica (catsfoot) is one of nine taxa receiving a five-star excellent rating for overall performance and survivability in the Chicago Botanic Garden's Evaluation Study of Plants for use on green roofs.



Left: A glimpse of Windy City Harvest rooftop farm atop McCormick Place. Below: Aerial view of rooftop gardens atop Daniel F. and Ada L. Rice Plant Conservation Science Center at Chicago Botanic Garden.



Place rooftop success has been the annual crop of the farm's Chicago Hardy fig. Larsen reflects that rooftop farming has contributed to her understanding of microclimates, noting that "kale we've grown toward the west (in shaded areas) is thicker than kale that's in the sun all day."

Flanked by a 1¹/₂' sedum buffer interspersed with native wildflowers including, wild quinine, spotted Joe Pye weed, wild onion, and milkweed, the rooftop farm rotates one edible plant family in each of the garden's eight 50'x50' blocks according to the season. Permanent plantings include gooseberry, currant, prickly pear, and an heirloom Black Republican cherry.

Each summer, 2 ^{1/2} deep terrace containers are filled with heirloom tomatoes, squash, and watermelon. In a 4-6" lightweight shale blend, amended with compost and granular fertilizer, cucumbers, zucchini, and eggplant are among the plantings that replace the radish, carrot, and spinach crops of spring.

IMPRESSIVE BENEFITS

Green roofs enhance quality of life by sequestering carbon, reducing heat island effects, improving stormwater management, and providing habitat for wildlife while creating a special refuge for humans.

According to the EPA, a 1,000 sq. ft. green roof can remove 40 lbs. of particulate matter (the same amount of pollution produced by 15 cars) from the air in a year. Roofs covered with vegetation experience summer surface temperatures over 50°F cooler than dark, conventional roofs, reducing demand for air conditioning up to 30%, and lowering ambient temperatures which contribute to heat islands. "Up to 60% of a 1" rain event can be managed by an extensive green roof," adds Kurt Horvath, Green Roof Solutions Product Development / Director of Operations. At McCormick Place, nearly 78,000 gallons of stormwater that would otherwise overwhelm sewers is retained by the intensive system.

For wildlife and people, the green roof offers space to thrive. One local study identified 26 species of pollinators that used green roofs for food and nesting materials. In the future, green roofs could offer microhabitats to help rare or endangered species and provide opportunities to cultivate biodiversity in larger cities. For now, plant-covered roofs provide space for humans to take a break and feel the peace that comes from being in a garden on a beautiful day.

The Daniel F. and Ada L. Rice Plant Conservation Science Center and McCormick Place are just two examples of a host of green roofs in the Chicagoland area that enrich all living things with ecological services and aesthetic value rooted in history.

Starting a Rooftop Garden

Do you have access to the roof to establish and care for a rooftop garden? If so, what do you want to grow? An intensive green roof supports a wider variety of plants. An extensive green roof weighs less. Both require ongoing care. Make sure you address whether permits are needed for your project.

Contact a structural engineer to be sure your roof can hold the weight. Green roof systems generally cost about 50% more than conventional roofing, but can extend the life of a roof up to 50%. "Not every roof membrane is compatible for a green roof," adds Horvath. "Detailing and waterproofing are needed."

Choose the right plants. Visit CBG Plant Evaluation Notes to learn more: www.chicagobotanic.org/ downloads/planteval_notes/no38_ greenroofplants.pdf