

5 standout species for extensive green roofs

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This is a view of a green roof module planted with blue grama grass in the first season of the trials. Credit: Photo by Jennifer Bousselot

Used throughout the world to lessen the environmental impact of urbanization, green roofs can offer a wide range of ecological and aesthetic benefits. A new study from researchers at Colorado State University's Department of Horticulture and Landscape Architecture published in *HortScience* evaluated six plant species to determine the plants' ability to thrive on extensive green roofs in Colorado. Five plants that survived the 2-year experiment are recommended for use in semiarid regions.

Extensive [green roofs](#) are characterized by shallow-depth (typically less than 15 than centimeters deep) growing media. Previous research on species that can survive and thrive on extensive green roofs has shown

that succulents outperform most non-succulents. Jennifer Bousselot, who led the Colorado study, noted that other green roof studies conducted elsewhere in the United States evaluated nonsucculents that were "typically native to areas with high annual precipitation and relatively deep soil profiles." The CSU researchers postulated that plants native to the Rocky Mountain region, especially those that inhabit areas with shallow, rocky, well-drained soils, may be better suited for use in extensive green roof systems. According to Bousselot, until this study extensive green roofs have not been scientifically evaluated in the high-elevation, semiarid climate of Colorado.

Though visual assessment and visual ratings have traditionally been used for measuring plant success on green roofs, these methods are usually subjective and not quantitative. To obtain more accurate data, the Colorado State University scientists compared digital image analysis data (DIA)—a process that incorporates periodic photographing of plants and digital analysis of the images—with manually collected converted two-dimensional data (C2D). The team determined that DIA and C2D are both useful for quantifying plant cover. "The DIA analysis appears to be a reliable substitution for the less accurate C2D method. Additionally, DIA can be used to estimate biomass accumulation, specifically for groundcover species."

The researchers examined plant area covered for six species. Plant cover increased for all six during the 2008 growing season, but one species, Kannah Creek Buckwheat, experienced low winter survival and was removed from the study in 2009. Of the remaining five species evaluated, blue grama and hardy ice plant outperformed small-leaf pussytoes, brittle pricklypear, and spearleaf stonecrop. Bousselot noted that because five species survived over the 2 years of this study, these species should be considered for use on extensive green roofs in semiarid regions.

More information: The complete study and abstract are available on the ASHS HortScience electronic journal web site:
[hortsci.ashspublications.org/c ... t/abstract/45/8/1288](http://hortsci.ashspublications.org/content/45/8/1288)

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