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The Role of Extensive Green Roofs in Sustainable Development

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Abstract

As forests, agricultural fields, and suburban and urban lands are replaced with impervious surfaces resulting from development, the necessity to recover green space is becoming increasingly critical to maintain environmental quality. Vegetated or green roofs are one potential remedy for this problem. Establishing plant material on rooftops provides numerous ecological and economic benefits, including stormwater management, energy conservation, mitigation of the urban heat island effect, and increased longevity of roofing membranes, as well as providing a more aesthetically pleasing environment in which to work and live. Furthermore, the construction and maintenance of green roofs provide business opportunities for nurseries, landscape contractors, irrigation specialists, and other green industry members while addressing the issues of environmental stewardship. This paper is a review of current knowledge regarding the benefits of green roofs, plant selection and culture, and barriers to their acceptance in the United States. Because of building weight restrictions and costs, shallow-substrate extensive roofs are much more common than deeper intensive roofs. Therefore, the focus of this review is primarily on extensive green roofs.

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