



Green Roof or Rooftop Garden Requirements and Plant List

Many commercial landscapers recommend succulents (mostly nonnative *Sedums*), because of the high rate of evaporation/transpiration on a rooftop due to sun and wind. Prairie plants for dry soil may also be used, especially those with shorter root systems. These plants are very well adapted to hot, windy, dry conditions (the prairie in August). On top of City Hall in Chicago (11 stories up) there are 20,000 plants of more than 100 species, including shrubs, vines and even trees!

Benefits

A green roof:

- lowers temperatures in the summer, saving on energy bills.
- reduces smog caused by pollution reacting with heat and sunlight as a result of increased demands made on power companies for more air conditioning.
- insulates in winter, reducing energy costs. It may provide up to 25 percent more insulation than a regular roof and can reduce heat loss due to wind by 50 percent.
- improves air quality by increasing oxygen and reducing carbon dioxide levels.
- improves water runoff by retaining 75 percent of rainwater that falls on it and traps sediments, leaves and particles.
- increases sound absorption.
- creates habitat for butterflies, birds and other wildlife.
- is aesthetically pleasing to surrounding buildings and creates a garden refuge in a sea of concrete.

Requirements

Size: The size is variable and is determined by the preexisting roof.

Light: Six hours or more of full sun per day are needed.

Water: Due to a green roof's elevation, the additional heat and wind present will result in supplemental watering being necessary.

Elevation/Topography: If the rooftop will be accessible to people and serve as an outdoor room, a flat roof is required. Inaccessible gardens, not used by people, could be constructed on a sloped roof.

Soil: Generally, the soil must be three to four inches thick and composed of a special, lightweight growth medium that is 30 percent organic soil, expanded clay pellets, wood chips and vermiculite.

Plant Materials: For an accessible rooftop, sun-loving native plants can be used. Annuals and plants adapted to containers may be selected. Sometimes small trees and shrubs are grown. Grasses, mosses and sedums are popular for inaccessible roofs.

Planting and Maintenance: Follow the directions from a landscape architect or horticulturist that are specific to the roof materials and plants used.

Special Considerations

Safety: Safety is a primary concern with a green roof. Every aspect of the project should be dealt with seriously, including easy and safe access, fencing or railings, number of occupants at any one time, etc.

Building Codes: Careful study of all regulations regarding construction and safety of the garden should be undertaken.

Professional Assistance: Due to the specialty of this type of garden, a structural engineer and a landscape architect familiar with this unique habitat should both be consulted.

Slope: The slope must be measured to determine if the garden will be accessible or inaccessible to people and if sloped, the degree of difficulty in establishing a rooftop garden.

Structural Load Capacity: How much weight can the roof hold, considering saturated soil (6.75 lbs./sq. ft. for every inch of soil depth) as well as up to three feet (20 lbs./sq. ft.) of snow, plant materials, garden equipment, people, etc.? A structural engineer must help you with these calculations.

Special Considerations - continued

Roofing: Existing roofing materials must be considered.

Drainage System, Waterproofing, Electrical and Water Supply: All of these factors must be considered. Consult with a structural engineer.

Plant List

black-eyed Susan (*Rudbeckia hirta*)
butterfly-weed (*Asclepias tuberosa*)
horsemint (*Monarda punctata*)
foxglove beardstongue (*Penstemon digitalis*)
June grass (*Koeleria macrantha*)
little bluestem (*Schizachyrium scoparium*)
lupine (*Lupinus perennis*)
New Jersey tea (*Ceanothus americanus*)
Ohio spiderwort (*Tradescantia ohioensis*)
prairie dropseed (*Sporobolus heterolepis*)
purple coneflower (*Echinacea purpurea*)
purple prairie clover (*Dalea purpurea*)
rough blazing-star (*Liatris aspera*)
sideoats grama (*Bouteloua curtipendula*)
azure aster (*Symphotrichum oolentangiense*)
white prairie clover (*Dalea candida*)
wild petunia (*Ruellia humilis*)
three-leaved stonecrop (*Sedum ternatum*)