

Court 5 Green Roof

Departmental Management (DM) Operations Staff and other USDA agencies have been working to implement multifunctional beneficial landscaping on the grounds of the USDA Headquarters Complex. E.O. 13514, Federal Leadership in Environmental, Energy, and Economic Performance requires federal facilities to incorporate environmentally and economically beneficial landscape practices on federal grounds into their landscaping, programs, policies, and practices. In the fall of 2010, the People's Garden Team completed the installation of a 3,500 square foot green roof in Court 5 of the South Building. This work followed the installation of a 500 gallon cistern that was installed to capture the runoff of a 1,000 square foot that is adjacent to the green roof. The cistern will provide water for the new green roof. The offices that face Court 5 will now have colorful and lively scenery instead of the stark gray parking lot and roof tops. The new green roof, therefore, adds aesthetic value while helping protect the environment.

Below is a picture of the newly planted green roof. Prior to the green roof, the roof was covered with stone ballasts. The new green roof also weighs about the same when wet, so no structural modifications were needed.



USDA Executive Master Gardener volunteers helped with the planting. This opportunity was used as a “hands on” experience to learn about stormwater management and green roofs.



The Court 5 green roof in bloom: Plants are grouped in zones by flower color. All through the growing season, there are colorful displays.



The 500 gallon cistern captures the water from the 1,000 square foot machine room roof adjacent to the new greenroof. Hard surfaces like roofs produce a lot of stormwater runoff. 1" of rain will produce over 600 gallons on runoff from this 1,000 square foot roof.



Green roofs act like giant bio-filtration sponges soaking up rain thus helping to retain stormwater and reducing excess stormwater runoff which is considered one of the most serious problems facing local waterways and the Chesapeake Bay. The USDA staff is using the high profile green roof as an example for other Federal agencies and to inform the public about beneficial landscaping practices.

Advantages to Green roof technologies:

Green roofs reduce storm water run-off (up to 90%), improve water quality of streams, and reduce the need for expensive, engineered structural storm water management controls (stormwater ponds, underground stormwater vaults, etc.).

Green roofs reduce the surface temperature of the roof membrane and protect the roof from solar radiation. Reducing the surface temperature extends the life of the roof. Green roofs have a life expectancy of about 40 years, which is twice the life expectancy of a standard roof.

Green roofs reduce the surrounding air temperature, provide substantial noise reduction, and thermal insulation. Green roofs have a high R (insulating) -value, therefore decreasing the cooling load needs of the building resulting in improved energy efficiency and savings. Green roofs reduce the “heat island effect.” The Environment Canada study showed that green roofs could contribute to a reduction of energy use, which in turn helps reduce the emissions of greenhouse gases and air pollutants.

Green roofs provide habitats for wildlife. Rooftop habitats can play one of two roles: a 'stepping stone' habitat connecting natural isolated habitat pockets with each other, or an 'island' habitat remaining isolated from other habitats on grade.

Green roofs improve air quality by filtering the air that moves across them: 1 square meter of roof grass removes 0.2 kg of airborne particulates every year. Through the process of photosynthesis, green roofs convert carbon dioxide (a greenhouse gas), water and sunlight into oxygen and glucose: 1.5 square meter of uncut grass produces enough oxygen per year to supply 1 human with their yearly oxygen intake requirement. Reduced outdoor temperatures slow reaction rates that produce smog which, in turn, lowers ground level ozone levels.

Green roofs are an effective means of improving a building's aesthetics. The variety of sounds, smells, colors and movements provided by plants can add significantly to human health and well being.