

## Do We Xeriscape on Campus?

The seven principles of Xeriscaping are a central part of the landscape planning at GWU. Proper water usage, plant selection, and cultural practices are essential for the success of any urban landscape. Large scale irrigation systems and areas requiring frequent watering are not efficient on a campus with large amounts of foot traffic, so proper planning and appropriate plant selection is essential.

The first step in planting any landscape is planning. Due to the urban location of campus, site conditions are highly variable, creating a variety of microclimates. These microclimates are caused by the exposure of the site, wind exposure, moisture availability, existing plantings, and the ambient heat created by buildings warming in the sun. All of these factors combine together to create different levels of sun exposure and moisture availability that need to be considered when planning new planting beds or augmenting existing gardens.

Example- Outside of the entrance of Lisner Hall, there is a very shallow, dry planting bed. The building eaves, large existing trees, depth of the planting bed, and ambient heat radiating from the concrete vault surrounding the bed were all taken in consideration when planning this planting. Previously, plantings required consistent irrigation to thrive, requiring the use of additional water and employee time. The solution was to fill the shallow, well drained beds with Prickly Pear Cactus (*Optunia ssp*), an incredibly tough Southwest US native cactus. The cactus thrive in the dry heat, require little care, flower prolifically, and have since been used to acquire cuttings to establish cactus beds in similar dry, hot areas, especially on the south side of buildings with large overhangs that block all precipitation.. This is an example of using a species best adapted to the area being planted to reduce water and labor input.



A central area of turf is a mainstay for a college campus and necessary for most large scale landscapes. University Yard provides a large area utilized for recreation, events, and a variety of other college activities. We are currently working to remove and replace unusable

areas of turf. Thus lowering our labor, reducing water use, reducing nonpoint pollution from fertilizer runoff, and improving the aesthetics of campus. Last spring, two areas of unusable turf were removed and replaced with native pollinator friendly perennials and woody plants to create a pollinator garden outside of the Biology Building. Below is the before and after photos of the area.

#### BEFORE



#### AFTER



These beds also represent our implementation of the xeriscaping principles of thorough soil preparation and amendment before planting and the use of mulch to preserve soil moisture and reduce evapotranspiration of water from soil. The area of turf that was previously in the bed had depleted the soil of essential nutrients and led to poor soil structure. Establishing a garden bed in this area would prove to be difficult and labor intensive without properly amending the soil prior to planting. To address this situation, the beds were thoroughly tilled, amended with compost, graded to help evenly distribute irrigation, and mulched following the planting to protect the soil from erosion and degradation. The pollinator beds have been very successful, needing little input and will provide beautiful flowers for years to come, while having less environmental impact and using less water than the previous patch of turfgrass.

All projects and plantings on campus are dictated by the limits of the plant material chosen. We do not plant inappropriate plants for the sake of having them in a specific area. Our goal is not to put a large amount of input into a specific species located in the wrong area, but to identify areas where the appropriate species will thrive, require little maintenance, create an aesthetically pleasing atmosphere, and not require replanting for years to come. Our aim is to beautify campus through appropriate species selection, reduce our environmental impact, and ensure thriving gardens for years to come.

Another good example of proper plant selection is the decrease in usage of annuals. Annuals are almost impossible to eliminate from a landscape, their seasonal displays of color are unmatched by perennial plants, however we have begun to identify several areas for annual plantings and filling many of the smaller beds with perennials. Maximum input from annual flowers can still be achieved while reducing the number of annuals ordered. Annuals require large amounts of water and fertilizer to produce large scale color displays, so placing them in several large areas instead of spread out all over campus reduces our water usage, localizes our application of fertilizer, and provides a stunning flower display.

There are several underground irrigation systems on campus. Many of these systems are located in large public plazas where foot traffic is at a maximum and hand watering is inefficient. By identifying areas of high traffic, where manual irrigation is unwieldy, we are able to focus the use of large scale irrigation systems on the areas that are most visible on campus. The largest traditional irrigation system on campus is located on University Yard and provides the benefit of being able to quickly irrigate a large area of turfgrass and gardens early in the morning to avoid soaking pedestrians. This is an example of where irrigation is a necessity.

Along with identifying areas of necessity, GWU is also beginning to utilize Low Impact Development strategies to mitigate and retain stormwater on areas of new construction. The Square 80 Public Plaza is a great example of the university utilizing sustainable technology to

manage stormwater. Square 80 uses a variety of biofiltration planters, bioswales, underground cisterns, rain barrels, and drip irrigation to trap 90% of the stormwater at the site. This stormwater is collected in the cisterns and pumped through the drip irrigation system which is ran throughout all the planting beds. Proper planning, implementation of new technology, and integration of the principles of xeriscaping has led to the creation of a more sustainable campus for years to come.