

1 Native & Alternative Grasses

Included in this plot are both cool and warm season indigenous grasses from the prairie regions of Colorado's Front Range. Cool season grasses grow best during spring and fall, while warm season grasses grow best during mid-summer. Alternative grasses include non-native species that are climate-adapted to this region. Both native and alternative grasses in this plot were chosen for their potential use in urban landscapes. All are irrigated using subsurface drip systems, and are mowed in the front and left un-mowed at the back of the plot.

2 Irrigation Technologies

Many new landscape irrigation innovations have emerged during the past few years. In particular, several new irrigation controllers are now available that use weather data or soil moisture to determine how much water should be applied to a lawn or landscape. These new controllers show great potential for water conservation.

3 Small Weighing Lysimeters

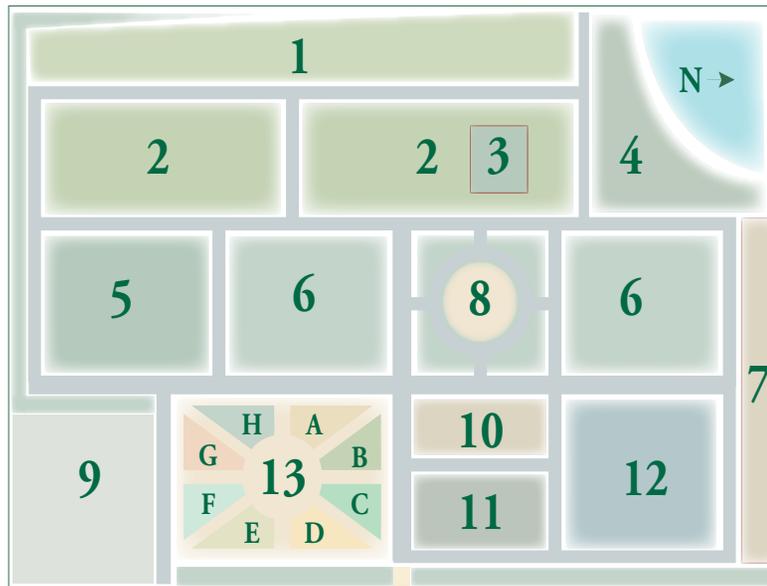
This turf grass variety study (Spring 2010 - Fall 2013) measured the evapotranspiration (ET) of 11 different grasses using 44 weighing lysimeters (a bucket of soil monitored continuously on a weighing platform). As the grasses draw water from the soil and transpire it to the atmosphere as water vapor, the weight of the lysimeters decreases. By quantifying each grass variety's water use over a growing season, its water conservation potential can be measured and evaluated.

4 Comparative Irrigation Techniques

This demonstration includes two different irrigation systems operating side by side. Subsurface drip irrigation is installed in the northeast half of the plot, while the southwest half employs traditional sprinkler spray irrigation. Both systems are metered to measure the amount of water required to maintain a healthy lawn.

5 Xeric Garden Irrigation Comparison

This study of three climate-adapted gardens is a collaboration between Northern Water and the Center for ReSource Conservation. Study results will be used to demonstrate the benefits and water requirements of, and the best practices for, water-wise gardens. The Center for ReSource Conservation's Garden In A Box program provides plant-by-number designs to help simplify water-wise gardening. For more information visit gardeninaboxco.org



6 Soil Preparation

In this demonstration both plots illustrate how to improve soil conditions and reduce water use by applying different types of compost. Organic amendments include animal and plant waste compost. Both were applied at the rates of 3 cubic yards and 6 cubic yards per thousand square feet. Amendments included biologicals and soil microorganisms to test the benefits of these naturally-occurring additions. The west half of both plots were tilled 4-6 inches in a traditional manner. The east half of the both plots were excavated 12-15 inches before rototilling to test the potential benefit of deeper tillage. The north plot was fully protected from disturbance during initial site construction, while the south plot was partially protected.

7 Line-Source Irrigation

This study uses a line-source sprinkler system to apply varying amounts of water to different grasses using sprinklers only along the plot's south edge. The amount of water applied decreases to the north, thus increasingly stressing the different grasses and diminishing turf quality to the north. Visitors can decide for themselves at what point on this continuum the turf quality is acceptable, while also providing some level of water conservation, but without noticeably reducing turf quality.

8 Weather Station

The weather station provides data to calculate the amount of water needed for a healthy lawn. Reference ET can be calculated using the ASCE Standardized Penman-Monteith Evapotranspiration Equation by measuring sunshine, temperature, relative humidity and wind. Crop coefficients are applied to estimate the water requirements of different plants and grasses. Irrigation controller cabinets and data collection equipment surround the weather station area. The plants in this area are walkable ground covers, drought hardy perennials and flowers. Plant Select varieties are featured in all four triangular plots.

9 Sprinkler Demonstration

Sprinkler nozzle performance is affected by spacing, configuration and operating pressure. Standardized tests measure how fast (precipitation rate) and how evenly (distribution uniformity) the water is applied. The results are a basis for comparing equipment and recommending how to improve sprinkler system performance and conserve water.

10 Alternative Grass Mixes

Different grass mixes can be used in urban landscapes. Mowing, fertilizing, weed control and irrigation practices may need to change to ensure that a particular grass mix thrives. These mixes may require the same amount of water or less than a typical lawn in this region.

11 Gradient Subsurface Drip Irrigation

This study compares seven low water use perennials and two turf grasses (established east to west) under five irrigation levels (four replicates of each plant material and watering combination - 180 total). Fleece wrapped subsurface drip irrigation lines run north to south, five inches below the surface and 13½ inches apart. Watering levels are highest at the center and decrease towards both the east and west. This study will provide an assessment of plant health, density, coverage and flowering as irrigation levels decrease. Visitors can decide for themselves a satisfactory watering level for their own landscapes.

12 Bluegrass Review

Forty Kentucky bluegrass cultivars were grown and evaluated for drought tolerance in the local heavy clay soils and arid climate. Irrigation was withheld for 4-6 weeks starting in mid-summer for several years. Cultivars were evaluated for green appearance at the beginning and end of the non-irrigated period.

13 Xeriscape Plaza

The eight miniature landscapes in this Xeriscape Plaza demonstrate a variety of “Colorado-friendly” landscaping themes, plants with low-water requirements, mulches of different types and colors, and low-volume irrigation. The plants fall into three categories:

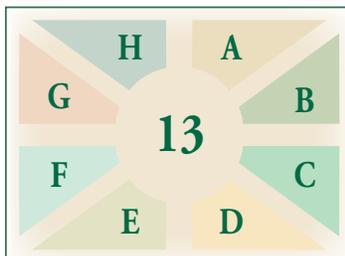
1-very low water use

(plants that need no additional irrigation once established);

2-low water use (plants that need small amounts of additional irrigation once established);

3-medium water use

(plants that need some additional irrigation once established). Colorado State University has identified some of these plant species as hardy, underutilized and well-suited for urban landscapes.



A Ornamental Plant Landscape

shows a number of low-water-using plants that are not native to our area but are very well adapted to the local climate. Many of these popular plants are sold at local nurseries and garden centers and are considered low-water-using plants.

Grass: Perennial Ryegrass

B Native Plant Landscape

shows plants that are native to Colorado and the Rocky Mountain region (although not necessarily native to the plains of Colorado’s Front Range). These plants have become popular over the years, and many are included in the landscapes we enjoy. These plants fall into the low-water-using category.

Grass: Alkaligrass

C Yucca Landscape

displays an interesting number and variety of Yucca as well as some very hardy ornamental grasses. The heavy clay soil has been amended to improve drainage because many of these plants don’t like to have “wet feet.” The combination of plants and rock mulches gives this very-low-water-using garden a unique look.

Grass: Buffalograss

D Perennial Landscape

is, as the name suggests, an array of flowering perennials and ornamental grasses that allow this garden to change its looks throughout the growing season. This garden does not have any turfgrass. Instead, low-growing spreading junipers are the lawn substitute.

E Water-Wise Landscape

utilizes a number of low-water-using plants and several mulches to demonstrate how Xeriscape principles are put to good practice. The low-volume irrigation system and the alternate turf variety help reduce routine maintenance and conserve water resources. Grass: Fine Fescue Blend

F Keep it Simple (KIS) Landscape

utilizes readily available plants and drought hardy Kentucky bluegrass for the lawn. By following basic landscape fundamentals of appropriate soil preparation (including quality organic composts and deep tillage) and proper irrigation and maintenance, this landscape is water-conserving.

G Prairie Landscape

utilizes native warm season grasses and a few plants native to the plains. It is simple – but also very drought-tolerant. Grass: Blue Grama, Buffalograss

H Southwest Landscape

does well in a hot and dry area. The plants are very low water use, meaning that once established they will not require any additional irrigation. This landscape demonstrates passive water harvesting. Plants that need slightly more water are placed in lower-lying areas that receive more runoff. The rock mulch used can harvest water from light rains and dew (wood mulch tends to soak up precipitation, while rock mulch actually returns it to the soil). Grass: Texas Hybrid Bluegrass

General information

Northern Water established an Irrigation Management Service as part of its mission in 1981. Originally focused on agricultural water conservation, IMS expanded its program in 1994 to include a landscape irrigation component. The intent is to provide practical water conservation information to homeowners, industry and landscape professionals. The Conservation Gardens at Northern Water is part of that mission.

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for location map and directions



Welcome to the Conservation Gardens at Northern Water



In the back yard

Northern Colorado Water Conservancy District
220 Water Ave.
Berthoud, Colorado