

Irrigation: Using Water Wisely

Mesa County is an agricultural community containing close to 2,500 farms. More fruit is produced in our county than any of the other 63 counties in Colorado. Our community prides itself on the wide variety of agricultural products produced here and we have a nice sized urban center, Grand Junction, Palisade, and Fruita, all situated in a high semi-arid desert. On average, we receive about 10" of annual precipitation. Most of our plants, both agricultural and urban, require more water than falls from precipitation. Irrigation is used to water crops and plants by bringing water from canals, pipes, sprinklers, or other man-made methods, rather than relying only on rainfall. The Discovery Garden is a demonstration space to show how plants can grow and thrive in our region with managed use of water.

The Discovery Garden uses city water to irrigate. The entire garden is irrigated by a solar-powered automated irrigation system. The valves are set on timers with a central controller so they open and close as programmed and are powered by batteries which are charged by the solar panels on the garden shed roof. This automated system allows the plants to be watered at night, resulting in water conservation. Additionally, as the weather changes, the amount of water going to each zone can be adjusted very quickly and remotely by changing the amount of time a zone runs. The Garden volunteers manage the water very carefully so that the plants thrive while keeping an eye to not overwater. You may be surprised to note in the table below that at the Discovery Garden water runs for minutes at a time, not hours.

The method of irrigation utilized in the Garden depends on the size and needs of the plants. For instance, in the Vegetable Garden a single irrigation line runs down the center of the row and waters the plants off of that. In the Children's Garden a central line with varying lengths of lateral drip lines coming off is used to accommodate irregularly spaced plantings. In the Uncommon Orchard spray head sprinklers water the cover crop. By using various methods and several valves for delivering water to the garden, gardeners can be selective about water use. Typically, spray sprinklers measure gallons of water being used by the **minute** (meaning lots of water!) where drip watering measures gallons of water used by the **hour**. So, where appropriate, drip irrigation is the preferred method because sprayers disperse significantly more water at once while drip irrigation is delivered much more slowly.

Soil health and irrigation go hand in hand. Healthy soil holds more moisture than poor quality soil. Have you ever dug into the ground, and though the top appears very dry, you need only dig a few inches into the ground to find that it is damp? This demonstration is an argument for careful watering; overwatering can cause as many problems in the garden and yard as underwatering can. Too much water, too frequently, causes the roots of plants to stay near the surface of the ground and as mentioned, the top layer of soil can become dry when there is plenty of moisture just a couple of inches further down in the soil. Driving roots deeper by applying appropriate amounts of water in conjunction with adding copious amounts of mulch promotes drought resistant plants and conserves water at the same time.

Water zones have been set up in the Discover Garden for each unique area:

Garden	Method of Irrigation	Number of MINUTES the Water is ON	Number of waterings per day	Number of waterings per week
Uncommon Orchard	Spray	5	3	3
Bookworm	Drip	30	2	4
Vegetable	Drip	30	2	4
Hugelkultur	Drip	5	3	3
Pollinator	Drip	3	3	3
Xeric	Drip	5	1	1

Using our water supply wisely is essential in the arid climate of Western Colorado but it does not mean we can't have beautiful growing gardens and landscapes. Through well-planned and thoughtful irrigation combined with mulching and planting shade-producing plants, we can enjoy our arid climate for decades to come!

Irrigation Video Resources

<https://www.youtube.com/watch?v=tmEj3MQPITY>

<https://www.youtube.com/watch?v=LlsAKtnF-zU>

<https://www.youtube.com/watch?v=UADXcEJTcso>

Website Resources

Water Use in the Grand Valley

<https://www.dripinfo.com/>

Irrigation

<https://extension.colostate.edu/topic-areas/yard-garden/drip-irrigation-home-gardens-4-702/>

<https://extension.colostate.edu/topic-areas/yard-garden/operating-and-maintaining-a-home-irrigation-system-7-239/>

http://sonomamg.ucanr.edu/Drip_Irrigation/Drip_Irrigation_Basics/

<https://waterwelljournal.com/irrigation-fundamentals/>

Recommended Books from MCPLD Collection:

Drip irrigation for every landscape and all climates: helping your garden flourish while conserving water! : outwit droughts with expert guidance

Water-conserving gardens and landscapes: water-saving ideas, plant selection list, home drip irrigation guide, easy-care landscapes, all-region zone maps

How do irrigation systems work?

Greywater, green landscape: how to install simple water-saving irrigation systems in your yard