



THINKING ABOUT BUYING AN IRRIGATED SMALL ACREAGE?

Check for water right, soil type, water quality

Caleb Carter

Got your eye on a small acreage where you can irrigate?

Water is essential to agricultural production in Wyoming, and potential buyers need to be informed about the characteristics of a property – good qualities as well as limitations.

The following factors in assessing a small acreage property can help identify its suitability for production under irrigation.

Site evaluation

Visit the property or area at various times of the year and/or talk to neighbors who have been in the area a long time. Ask about weather

and what challenges the area might pose for your goals. Some parts of Wyoming can vary tremendously from season to season. What is the overall condition of the property? Are there outbuildings or equipment that come with it? Will you have to build fences? Is the infrastructure still present for irrigation, and what condition is it in? Knowing what you are getting and what work will be required to adapt the property to your goals can be valuable information up-front.

Water rights

The property must have water rights if you are going to irrigate. Water rights are based on the law of prior

appropriation and simply having a ditch on the property does not entitle use of the water. A water right allocates an amount of water based on acreage and seniority. This might determine how many animals or what crops you can raise. Contact the State Engineers Office at (307) 777-5063 or online at www.seo.state.wy to determine if a property has water rights. A water right must be used at least once every five years to keep it. If no well is present, you may need to install one, or, in some cases, even haul water to the property.

If the water right is from a ditch, get to know your ditch rider from the local irrigation district. You will communicate with him or her to

Table 1. Available soil moisture holding capacity for various soil textures.

Soil texture	Available moisture (inches of water/foot of soil)
Coarse sand and gravel	0.2 to 0.7
Sands	0.5 to 1.1
Loamy sands	0.7 to 1.4
Sandy loams	1.3 to 1.8
Fine sandy loams	1.7 to 2.2
Loams and silt loams	2.0 to 2.8
Clay loams and silty clay loams	1.7 to 2.5
Silty clays and clays	1.6 to 2.2

Adapted from <http://bit.ly/soilwaterplant>

have water turned out to your field. Irrigation districts typically measure water in cubic feet per second (cfs). But when discussing the amount of water used by a crop, or crop water use, it is often stated in acre-inches, meaning 1 inch of water across 1 acre of land. Knowing how to convert between the two is helpful. See Table 3 (lower right) for common water units and conversions.

Water quality

The water quality might not be good even if there is a water right. Water quality can change dramatically over a short distance or over time; check regularly – at least twice a year if it is the primary source of water. There are specific water quality limits set by the Environmental Protection Agency for domestic drinking water as well as for livestock or irrigation uses. Test the water to identify any potential problems, based on the intended use.

Irrigation management

The first step in planning your irrigation is determining when and how much water to apply, whether for crops, forage, or irrigated pasture. If soil is too dry, the plants will be stressed, reducing production, while



overwatering can leach nutrients from the soil. Allow plants to remove around 50 percent of available soil moisture between irrigations. A quick test is to take a handful of soil from 6 to 12 inches deep and squeeze it into a ball. If it stays in a ball when bounced in your hand, it has more than 50 percent available soil moisture. If it crumbles, it needs irrigation. The water holding capacity dictates time between irrigations; infiltration rate indicates how quickly that water can be replaced. See Tables 1 and 2 above.

Soil type

Go to the U.S. Department of Agriculture's NRCS Web Soil Survey to learn about the soils. The survey will identify several chemical and physical properties and suitable uses

Table 2. Infiltration rates of common soil textures

Soil texture	Infiltration rate (inches of water/hour)
Sands	>1.0
Loamy sands	0.7 to 1.00
Sandy loams and fine sandy loams	0.50 to 1.00
Loams and silt loams	0.3 to 0.7
Sandy clay loams and silty clay loams	0.2 to 0.4
Clays, sandy clays, and silty clays	0.1 to 2.0

Adapted from <http://bit.ly/watersoilslopes>

for the site as well as potential limitations such as poor drainage, high pH, salinity, or alkalinity. It's a quick way to compare properties but not a substitute for visual assessment of the condition of the property.

Performing a soil test gives a good idea of the soil condition and what, if any, nutrients are lacking. This can help identify needed inputs and how intensively the soil will have to be managed to make it productive. Whether you want to graze horses or grow vegetables, knowing the soils will put you ahead in planning management strategies and setting realistic goals.

Table 3. Useful water units and conversions

one cubic foot	=	7.48 gallons
one acre inch	=	3630 cubic feet
	=	27,154 gallons
one acre foot	=	12-acre inches
	=	43,560 cubic feet
	=	325,851 gallons
450 gal/minute	=	1 acre inch/hour
	=	1 cubic foot/second

Caleb Carter is a University of Wyoming educator based in Goshen County and serves southeast Wyoming. He specializes in crop systems and can be reached at (307) 532-2436 or ccarte13@uwyo.edu.