



BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday May 6, 2016

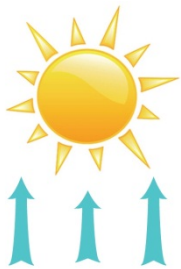
Welcome to the 2016 irrigation season! Please contact Jennifer Schoonen - Blackfoot River Steward (406-360-6445) for more information on this and other Challenge programs. Once again we will provide weekly summaries of weather, crop water use and soil moisture conditions as well as tips for irrigation and crop production. These summaries are based on our weather, soil and crop monitoring for individual irrigators throughout the drainage. A condensed overview of suggestions for the entire irrigation season is presented on the last page of this report.

2016 is looking a lot like 2013 and 2015 when the growing season started a month early and dry soil conditions persisted. The good news is that irrigators who applied water early in 2013 and 2015 still had excellent crops despite drought later in the season. The theme so far for 2016 is to irrigate early and well - while water supplies last and growing conditions are good. Many systems are already operating so if you haven't started irrigating - check your soil moisture and start soon.



WEATHER - WARM WITH SHOWERS

We begin this irrigation season dry and warm with below average rainfall so far this year, including in April. Above average temperatures have once again started the growing season weeks ahead of "normal". There is a potential for drought conditions to develop later in the summer if dry conditions persist. Warm temperatures are expected next week with the possibility of scattered rain showers. The 30 day forecast indicates normal temperatures and rainfall. The 90 forecast indicates above normal temperatures and normal rainfall.



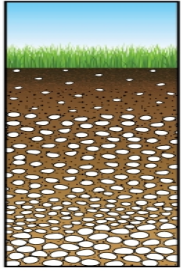
CROP WATER USE - MODERATE (HIGHER THAN NORMAL)

Crop water use was higher than normal this last week due to warm temperatures and dry conditions. It will be moderate next week with warm temperatures and possible showers. Crop water use was much higher than average throughout April.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	0.8	1.0 (0.7 - 1.1)	3.0
PASTURE	0.7	0.9 (0.7 - 1.1)	2.8
SPRING GRAINS	0.0	0.0 (0.0 - 0.5)	0.0
WINTER WHEAT	0.9	1.0 (0.8 - 1.2)	3.5
LAWNS	0.7	0.8 (0.7 - 0.9)	2.8

¹Expected water use (range if weather becomes cooler or hotter than expected)

²Beginning April 1 - note in 2010-13 we started our seasonal total on May 1 but now include April



SOIL MOISTURE - VERY LOW TO START THE SEASON

Soil moisture levels throughout the drainage this week were as low as I have ever seen them at the start of the growing season. Most sites that have not yet been irrigated had 25% or less of their soil moisture holding capacity. That means a clay soil that usually holds 6 inches of water in the 3 foot root zone only had 1.5 inches. Sandy soil had even less stored water. This is similar to conditions at the start of 2013 and 2015, our last drought years. We expect winter snowmelt and spring rains fill up our soils but warm, dry conditions caused significant soil moisture loss in March and April.

Irrigation Information Available from the Blackfoot Challenge:

- Weekly irrigation reports for all basin irrigators – Available by email and on the Challenge website (you are reading an example now)
- Blackfoot Irrigation Guide – Available on the Challenge website
- Irrigation Information Handouts - Available on the Challenge website
- Irrigation Workshops
- Irrigation Consultant – Available by phone and email for irrigation questions

Use This Info To:

- Compare weekly crop water use with how much you irrigate
- Learn your soil water holding capacity – mostly 1 - 2 inches per foot
- Know your critical crop periods – June for most crops
- Know dry soil from moist
- Know how deeply your irrigation penetrates – 1 inch only goes $\frac{1}{2}$ to $\frac{3}{4}$ foot deep
- Identify options for drought years – especially irrigate early while its available
- Apply the right amount of water at the right time to achieve your goals.

WEEKLY TIPS

Water Supply and Streamflows

The May 1 water supply forecast does not entirely reflect our extremely dry soil conditions. Snowpack is reported as 79% of normal (up from 68% last year) although the report points out a significant decrease from April 1. Streamflow predictions for May-July are for 81% of normal so water should be available for at least the early part of the irrigation season. However, local observations suggest that the smaller streams and lower elevation drainages are seeing flows drop already. The Surface Water Supply Index (SWSI) for the Blackfoot Drainage is reported as Moderately Dry (-2.6). Reservoir storage is reported as 106% of normal (up from 85% last year).

Time to Fill Up Your Soil and Keep Moisture Levels High. May is the easiest time to fill up your soil moisture holding capacity, before crop water use gets high. For the next few weeks, crop water use for hay and pasture will be 1 - 1 $\frac{1}{2}$ inches per week. Applying more than this amount will add to soil moisture storage. Right now most soils that have not been irrigated are almost dry so there is a lot of catching up to do.

A good soil (clay, silt, loam with few rocks) will hold 1 ½ - 2 inches of water per foot or 4 - 6 inches in a three-foot root zone (depth managed for hay and pasture crops). If you have not yet irrigated, you only have 1-2 inches so you need to add 2-5 inches to fill up your soil. Remember to also add what the crop uses while you irrigate (1-1½ inch per week) to completely fill up the soil.

A very sandy and rocky soil will hold about 1 inch of water per foot or 3 in a three-foot root zone (depth managed for hay and pasture crops). Most of these soils only showed about 1 inch of stored soil moisture this week so it would take 2 more inches to fill them up. Remember to also add what the crop uses while you irrigate (1-1½ inch per week) to completely fill up the soil.

Not Sure How Much Water to Apply?

JUST LOOK! It's not rocket science, check your soil moisture with a soil probe or shovel until the soil is moist to a depth of 3 feet for hay and pasture crops or 2 feet for annual crops. If it looks and feels moist – you're good. If it's dusty and dry – keep irrigating. Call for a guide to soil moisture estimating.

Roots

Irrigate deeply at the start of the irrigation season to promote deep root growth. If you allow the soil to dry out and then only apply 1 inch at a time, you will only moisten the top 6-8 inches. This means your crop is looking for all its moisture and nutrients in this thin soil layer. Irrigate new crops deeply after they are established to moisten the entire root zone and lead your roots to deeper depths.

Drought in 2016?

It appears that drought conditions are possible if not likely this year. Here are some options for reducing water use taken from our irrigation guide which is available on the Blackfoot Challenge website and includes details for each option. Some strategies can be used immediately and others require planning ahead and can be used in future years. Some of these practices can have negative consequences for irrigators (usually lower yield or loss of alfalfa plants).

- Fill Up Your Soil at the Beginning of the Season and Try to Keep it Near Full
- Rotate Irrigation Systems During Low River Flows
- Save Water for Critical Growth Periods
- Reduce Irrigated Acreage
- Concentrate Your Efforts on the First Cutting
- Grow Your Crop During Cooler Periods
- Apply More Water At Each Application
- Plant Crops That Use Less Water
- Practice Irrigation Scheduling
- Improve Irrigation System Performance
- Plan For a Lower Yield and Reduce Other Crop Inputs to Match
- Be More Flexible With Changing Seasonal and Year-to-Year Conditions

For further information contact Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

THE BLACKFOOT DRAINAGE IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations with more detail provided throughout our irrigation guide.

APRIL – GET READY AND PLAN YOUR IRRIGATION STRATEGY!

- Get your irrigation system ready – perform maintenance and test system.
- Evaluate soil moisture conditions and weather predictions then plan for irrigation and drought if needed.



MAY – CHECK SOIL MOISTURE & BE READY FOR UNUSUAL HEAT OR COLD!

- Check the soil moisture content at the start of growing season and fill up the soil to its water holding capacity during early irrigations (2-4 inches).
- Watch for dry soil conditions, especially with new plantings and apply water to ensure good germination and emergence.
- Irrigate deeply at least once early in the season to promote deep root growth.
- Apply 2-5 inches of irrigation to hay and pasture crops in May depending on weather. Apply 0-2 inches to spring grains and new plantings as needed based on weather and growth. Apply extra water to fill up the soil (2-4 in).

JUNE – THIS IS THE TIME TO MAKE YOUR BIGGEST EFFORT SO POUR IT ON!

- Apply 6-8 inches of irrigation in June to hay and pasture crops and winter wheat depending on weather. Apply 5-8 inches to spring grains and new plantings as needed based on weather and growth.
- Consider irrigating deeply to fill up soil root zone and promote deep root growth.
- Be sure small grains are irrigated well during their critical periods of boot, bloom and early heading.



JULY – POUR IT ON UNTIL HARVEST AND RETURN QUICKLY

- Apply 1 - 2 ½ inches of irrigation per week in July to all crops - depending on weather.
- Cutting is a critical stress period for hay crops, especially alfalfa so irrigate deeply to fill up the root zone before cutting then get back across the field quickly after cutting. Crop water use declines when hay is cut so this is a good opportunity to fill up the soil again. Irrigate at least once after cutting.
- Stop irrigating small grains at the milk to soft dough stage but be sure there are 1- 2 inches of soil moisture left at this stage to prevent kernels from shrinking.

AUGUST- KEEP IRRIGATING SMALL GRAINS UNTIL KERNELS MATURE, BE DROUGHT AWARE!

- Apply 1 - 2 inches of irrigation per week in August to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed.
- Many folks irrigate for pasture following their one hay cutting. Irrigate according to how much pasture you seek and with consideration for other water needs in the drainage, especially in drought years.
- Reduce river withdrawals by rotating systems and reducing the amount of irrigation at one time.



SEPTEMBER – APPLY AS NEEDED/AVAILABLE & GET READY FOR SPRING!

- Apply ½ - 1 ½ inches of irrigation per week in September to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed. Prepare the system for winter and an early start next spring.