

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday June 26, 2020



We finally had some nice weather with little rain and crops leaped high into the sky this week. Next week should have a mix of nice weather and some intense storms that may have heavy rain for short periods. Blackfoot croplands in the lower drainage had a trace of rain this week while the upper drainage reported 1/4 to 1/3 inch. Crop water use increased significantly but remains below average with crops using around 1 ½ inches. Next week's crop water use should be slightly higher but still be below average. Surface soil moisture dropped this week unless irrigated as crops used more water than rainfall replaced. Blackfoot River flows fell to below average for the first time this season.

We provide weekly summaries of weather, crop water use and soil moisture conditions as well as tips for irrigation, soil health and crop production. A condensed overview of suggestions for the entire irrigation season is presented on the last page of this report. Use it to look ahead and plan or to compare what you're doing now. If you would like other information please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).



### WEATHER - A WEIRD WEATHER WEEK AHEAD

Last week Blackfoot croplands had warmer temperatures with a trace of rain in the lower drainage and 1/4 to 1/3 inch in the upper drainage. Rainfall values in the charts below are an average for the drainage and you should trust your own rain gauge. Next week will be cool with temperatures in the 60s for highs and the 40s for lows. The weird part will be heavy rain predicted to fall across limited areas, mostly in short periods. The 30-day forecast says above average temperatures and rainfall. The 90-day

forecast says above average temperatures and average rainfall (which usually means – not much).

### CROP WATER USE - BELOW AVERAGE LAST WEEK BUT INCREASING NEXT

Last week crop water use increased but was again below average due to cool temperatures with most crops using about 1 ½ inch. Water use will be similar next week but affected by heavy localized rain. The table below provides a quick summary of crop water use this last week and an estimate for next week. The table and chart on Page 2 summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead.

<b>WATER USE IN INCHES</b>	<b>LAST 7 DAYS</b>	<b>NEXT 7 DAYS TOTAL<sup>1</sup></b>	<b>NEXT 7 DAYS DAILY AVE<sup>2</sup></b>	<b>SEASON TOTAL<sup>3</sup></b>
<b>HAY CROPS</b>	<b>1.4</b>	<b>1.5</b> (1.3 - 1.7)	<b>.21</b>	<b>9.2</b>
<b>PASTURE</b>	<b>1.2</b>	<b>1.3</b> (1.1 - 1.5)	<b>.19</b>	<b>8.0</b>
<b>SPRING GRAINS</b>	<b>1.7</b>	<b>1.8</b> (1.6 – 2.0)	<b>.26</b>	<b>5.9</b>
<b>WINTER WHEAT</b>	<b>1.7</b>	<b>1.8</b> (1.6 – 2.0)	<b>.26</b>	<b>10.2</b>
<b>LAWNS</b>	<b>1.3</b>	<b>1.4</b> (1.2 - 1.6)	<b>.20</b>	<b>8.9</b>

<sup>1</sup>Expected water use over the next week (range if weather becomes cooler or hotter than expected)

<sup>2</sup>Expected average daily water use over the next week (compare this with your soil moisture content)

<sup>3</sup>Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

**BLACKFOOT 2020 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)**

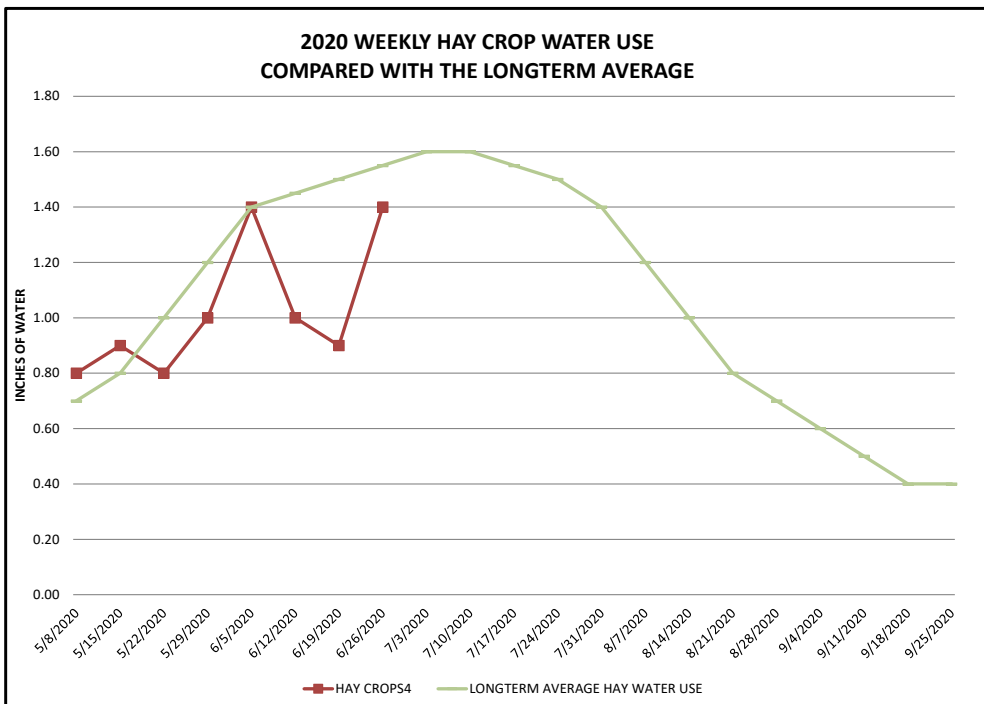
WEEK ENDING	RAIN <sup>1</sup>	2020 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/8/2020	0.01	0.80	0.70	0.10	0.10	0.90	0.90	0.70	1.00	0.30
5/15/2020	0.30	0.90	0.80	0.10	0.10	0.90	0.90	0.80	1.10	0.50
5/22/2020	1.25	0.80	0.70	0.30	0.20	0.80	0.80	1.00	1.20	0.60
5/29/2020	0.10	1.00	0.80	0.70	0.40	1.20	0.90	1.20	1.30	0.80
6/5/2020	1.00	1.40	1.20	1.00	0.70	1.50	1.30	1.40	1.50	1.00
6/12/2020	1.00	1.00	0.90	1.00	0.90	1.10	1.00	1.45	1.70	1.00
6/19/2020	0.25	0.90	0.70	0.90	0.90	1.00	0.80	1.50	1.90	1.10
6/26/2020	0.25	1.40	1.20	1.70	1.70	1.70	1.30	1.55	2.00	1.10
7/3/2020								1.60	2.10	1.30
7/10/2020								1.60	2.00	1.20
7/17/2020								1.55	2.00	1.20
7/24/2020								1.50	2.20	1.10
7/31/2020								1.40	2.20	1.10
8/7/2020								1.20	1.50	0.90
8/14/2020								1.00	1.30	0.70
8/21/2020								0.80	1.20	0.60
8/28/2020								0.70	1.10	0.50
9/4/2020								0.60	1.00	0.40
9/11/2020								0.50	0.90	0.40
9/18/2020								0.40	0.70	0.30
9/25/2020								0.40	0.70	0.30
<b>TOTAL</b>	<b>5.41</b>	<b>9.20</b>	<b>8.00</b>	<b>5.90</b>	<b>5.10</b>	<b>10.20</b>	<b>8.90</b>	<b>22.85</b>	<b>30.60</b>	<b>16.40</b>

<sup>1</sup> Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April,May and Sept, 0.15-June and August, 0.2-July) (This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

<sup>2</sup> **This years** maximum water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Will vary slightly across the drainage.

<sup>3</sup> **Longterm average** water use for each crop each week based on long-term historic data.

<sup>4</sup> Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



Remember to Check Your Soil Moisture



## SOIL MOISTURE - DROPPING WITH INCREASED CROP WATER USE

Soil moisture across the drainage dropped by about 1 ½ inches in fields not irrigated since crop water use exceeded rainfall. Those who applied more than 1½ inches this week boosted soil moisture.



Soil near 100% of its water holding forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a shiny surface. Bouncing the soil in the hand usually brings water to the surface. Soil near 75% of its water holding capacity also forms a ball and leaves the hand moist but no actual water is visible on the hand or soil when bounced.



*If Your Soil Looks Like This - It Has A Low Water-Holding Capacity*

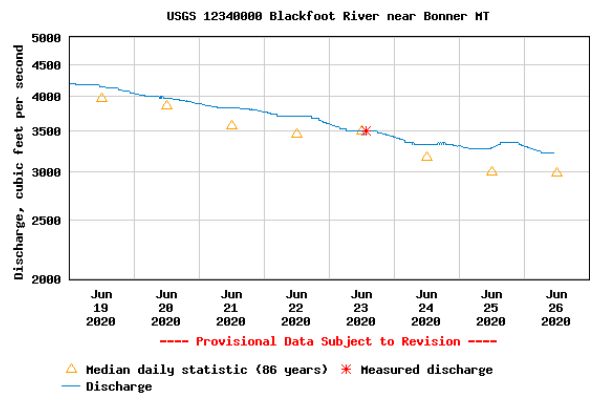
## WEEKLY TIPS

### Blackfoot River Flow Now Below Average



<b>TODAY:</b>	<b>3,220 CFS</b>
<b>AVERAGE:</b>	<b>3,610</b>
<b>HIGHEST:</b>	<b>12,800 (1899)</b>
<b>LOWEST:</b>	<b>716 (1977)</b>

Blackfoot River flows fell to below average for the first time this season as rainfall dropped and temperatures rose. Flows are likely to continue dropping below average for the rest of the season if the hot, dry weather that's predicted is true. However, thunderstorms are predicted this week and could cause temporary increases in flow.



### Soil Health Information Sources

**Brad Weltzien**, Blackfoot Challenge Land Steward, has identified some great articles to add to your reading list:

How to Restore Depleted Soil with Cattle

<https://www.canadiancattlemen.ca/features/how-to-restore-depleted-soil-with-cattle/>

Building Healthy Pasture Soils

<https://smallfarms.cornell.edu/2018/06/building-healthy-pasture-soils-2-2/>



The Four Principles of Soil Health Applied to Forages

<https://onpasture.com/2018/10/22/the-four-principles-of-soil-health-applied-to-forages/>

Soil Health Digest: 20 Things Every Farmer Needs to Know

<https://www.agriculture.com/crops/cover-crops/soil-health-digest-20-things-every-farmer-needs-to-know>

**Scott Gordon**, local turnip pioneer and member of the Blackfoot Challenge Soil Health Work Group points out the many resources available on the Green Cover Seed Company web site:

<https://greencoverseed.com/resources/>

You can sign up for their blog or check out one of their excellent webinars:



## Webinars

**June 16th - Soil Health with Dr Ray Ward**

**June 9th - Stockpile Grazing Mixes Part 2**

**June 2nd - Stockpile Grazing Mixes Part 1**

**May 26th - Rescue Your Fescue**

**May 19th - Corn Interseed at V4**

**May 12th - Alternative Crops**

**May 5th - Warm Season Cover Crops**

**April 28th - Reduce Your Inputs**

**April 21st - Elevate Ag Biological Products**

**April 14th - Perennial Pastures**

**April 7th - Grazing Covers with Sheep, Pigs & Cattle**

**March 31st - Covid-19 Opportunities in Ag**



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](mailto:barry@landandwaterconsulting.net)

## THE BLACKFOOT DRAINAGE IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations for the whole season (more detail in the 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. Small grains harvested for seed are usually irrigated up to the milk to soft dough stage but be sure soil moisture remains to prevent kernel shriveling. Small grains for forage are often harvested earlier when plants are less dry and seeds soft.

### 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. Stop irrigating if you can.



### 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.