

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

September 30, 2019 - The End of Another Season



[See Page 3 for Installing, Calibrating or Rehabilitating Soil Moisture Sensors](#)

September is finishing up by turning into winter with over a foot of snow predicted for these last few days of the month. Blackfoot River flows have mostly hovered between 700 and 750 CFS responding to rain events. Next week will start with rain and snow then become a mix of showers and sun. Crop water use was near average this week at just over ½ inch for most crops. Crop water use should drop to near nothing as snow and cold temperatures bring most growth to a halt. The weather forecast throughout the winter is for above average temperatures and average precipitation.

These reports, provide weekly summaries of weather, crop water use and soil moisture conditions plus tips for irrigation, soil health and crops. Hints for the entire irrigation season are on the last page. For other irrigation information please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).

### WEATHER - SNOW, RAIN, SUNNY - A MIX - GET READY



Croplands throughout the drainage had a little rain this week (¼ to ½ inch). It's going to snow this weekend followed by a week of mixed, sun, snow and rain. I hope you have winterized. I hear if you have the cows stand next to the wheel lines they won't freeze. The future throughout the coming winter months is currently predicted to have above average temperatures and average rainfall.

### CROP WATER USE - AVERAGE THIS WEEK AND NOW COMES THE SNOW

Crop water use remained low this week but was still slightly above average. Hay crops, pasture and lawns used ½ inch or a little more. Crop water use should drop to little or none with snow and cold predicted for this weekend. Most early-planted annual crops including small grains have been harvested and water use has ended. The table below provides a quick summary of crop water use last week and an estimate for next week. The table and chart on Page 2 summarize the entire season.



<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>0.7</b>	<b>0.6</b> (0.4 – 0.6)	<b>.09</b>	<b>26.0</b>
<b>PASTURE</b>	<b>0.5</b>	<b>0.4</b> (0.3 - 0.5)	<b>.06</b>	<b>21.8</b>
<b>SPRING GRAINS</b>	<b>0.0</b>	<b>0.0</b> (0.0 – 0.0)	<b>.00</b>	<b>17.0</b>
<b>WINTER WHEAT</b>	<b>0.0</b>	<b>0.0</b> (0.0 - 0.0)	<b>.00</b>	<b>16.5</b>
<b>LAWNS</b>	<b>0.6</b>	<b>0.5</b> (0.4 – 0.6)	<b>.07</b>	<b>24.6</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

**BLACKFOOT 2019 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)**

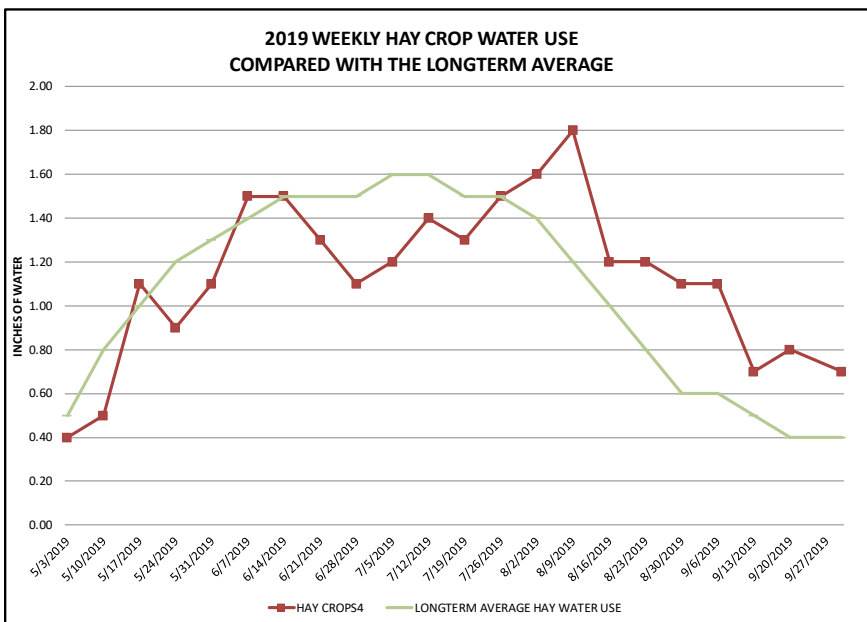
WEEK ENDING	RAIN <sup>1</sup>	2019 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE POTENTIAL CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/3/2019	0.30	0.40	0.50	0.10	0.10	0.40	0.50	0.50	0.80	0.30
5/10/2019	0.30	0.50	0.40	0.10	0.10	0.50	0.50	0.80	1.00	0.50
5/17/2019	0.40	1.10	0.90	0.10	0.10	1.10	1.00	1.00	1.10	0.60
5/24/2019	0.10	0.90	0.80	0.20	0.10	1.00	0.90	1.20	1.30	0.80
5/31/2019	0.75	1.10	0.90	0.50	0.20	1.20	1.00	1.30	1.40	0.90
6/7/2019	0.30	1.50	1.30	1.00	0.60	1.60	1.40	1.40	1.50	1.00
6/14/2019	0.50	1.50	1.40	1.50	1.10	1.70	1.50	1.50	1.70	1.00
6/21/2019	0.10	1.30	1.10	1.40	1.20	1.50	1.20	1.50	1.90	1.10
6/28/2019	0.10	1.10	0.90	1.20	1.10	1.20	1.00	1.50	2.00	1.10
7/5/2019	0.40	1.20	1.00	1.30	1.20	1.30	1.10	1.60	2.10	1.30
7/12/2019	0.25	1.40	1.10	1.50	1.50	1.50	1.30	1.60	2.00	1.20
7/19/2019	0.50	1.30	1.00	1.40	1.40	1.00	1.20	1.50	2.00	1.20
7/26/2019	0.01	1.50	1.20	1.70	1.70	0.75	1.40	1.50	2.20	1.10
8/2/2019	0.01	1.60	1.30	1.80	1.80	0.50	1.50	1.40	1.70	1.00
8/9/2019	0.10	1.80	1.40	1.50	2.00	0.10	1.70	1.20	1.50	0.90
8/16/2019	0.40	1.20	0.90	1.00	1.25	0.00	1.10	1.00	1.30	0.70
8/23/2019	0.20	1.20	1.00	0.50	0.50	0.00	1.10	0.80	1.00	0.50
8/30/2019	0.20	1.10	0.90	0.10	0.10	0.00	1.00	0.60	0.80	0.40
9/6/2019	1.00	1.10	0.90	0.00	0.00	0.00	1.00	0.60	0.70	0.30
9/13/2019	1.50	0.70	0.60	0.00	0.00	0.00	0.70	0.50	0.70	0.30
9/20/2019	0.25	0.80	0.60	0.00	0.00	0.00	0.70	0.40	0.60	0.20
9/30/2019	0.50	0.70	0.50	0.00	0.00	0.00	0.60	0.40	0.60	0.20
<b>TOTAL</b>	<b>9.67</b>	<b>26.00</b>	<b>21.80</b>	<b>17.00</b>	<b>16.15</b>	<b>16.45</b>	<b>24.60</b>	<b>24.80</b>	<b>31.40</b>	<b>17.10</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)

<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.

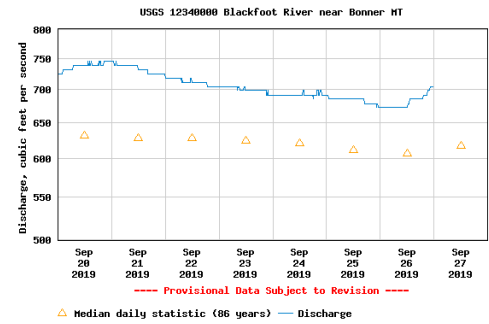
<sup>3</sup> **Longterm average** water use for each crop each week based on long-term historic data.

<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.



## STREAMFLOWS - REVIVED WITH RAIN!

Rain events kept the Blackfoot River flow at Bonner bouncing between 700 and 750 CFS most of this week. Today's flow is at 704 CFS compared with an average for this date of 638 CFS. The Highest flow on this date was 1,210 (1965) and the lowest was 377 CFS (1987). The rain and snow predicted for the next few days should continue to support an upward trend in flows.



## IRRIGATORS AROUND THE WORLD ARE TALKING ABOUT SOIL MOISTURE SENSORS

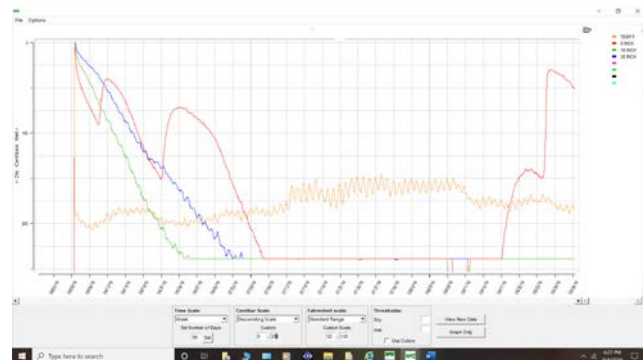
- New Zealand - <https://www.irrigationnz.co.nz/Members%20Only/good%20management%20practice/Book11-SoilMM.pdf>
- Zimbabwe - <https://www.environmental-expert.com/products/keyword-moisture-sensor-605/available-in-zimbabwe>
- France - [https://ec.europa.eu/growth/tools-databases/dem/monitor/sites/default/files/DTM\\_Smart%20vineyard%20v1.pdf](https://ec.europa.eu/growth/tools-databases/dem/monitor/sites/default/files/DTM_Smart%20vineyard%20v1.pdf)
- Chile - <http://www.chinasmartsensor.com/soil-moisture-sensor/>

DO YOU NEED SOIL MOISTURE SENSORS?

DO YOU HAVE OLD SOIL MOISTURE SENSORS TO REHAB OR CALIBRATE?

DO YOU WANT TO LEARN HOW TO USE SOIL MOISTURE SENSORS?

Soil Moisture Sensors determine soil moisture content instantly and document changes over time. Sensors placed in the upper root zone show the immediate boost in moisture with irrigation and the decline as crops use water. Deeper sensors reveal when irrigation has penetrated the entire root zone and filled up the soil to its full water holding capacity. **The Blackfoot Challenge is considering a new and improved soil moisture sensor program for irrigators.** This program could assist with equipment costs, installation and proper calibration of sensors as well as training in how to interpret and use results.



Seasonal Soil Moisture and Temperature Chart

Let us know if you might be interested. Our goal is to provide irrigators with a permanent useful option for soil moisture monitoring that doesn't require a shovel and could be upgraded as cell service improves. Eventually you will have sensors connected to your irrigation system and it will irrigate by itself. Contact Jennifer or Barry if you are interested in installing sensors.

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)