

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday May 31, 2019



Cool temperatures kept crop water use below average this week at about 1 inch for most crops. Rain varied widely - from ¼ to 1 ½ inches across local croplands. Soil moisture levels dropped ¼ - 1 inch depending on how much rain fell. Many folks started up sprinklers this week and most of the rest will start in the coming week. It continues to be a relatively easy beginning to the irrigation season.

In these reports, we provide weekly summaries of weather, crop water use and soil moisture conditions plus tips for irrigation, soil health and crop production. Hints for the entire irrigation season are presented on the last page each report. Use these to look ahead and plan or to compare with 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 - MOIST WEEKEND THEN SUNNY+WARM

This week started cool and wet then turned warm and sunny. Rainfall was erratic across local croplands with most of the lower drainage having about ¼ inch while the upper drainage had 1 – 1½ inches. Sunny skies and warm temperatures (high 70s) should dominate next week. The 30-day prediction is for average temperatures and rainfall. The 90-day prediction says above average temperatures and rainfall.



### CROP WATER USE - INCREASING FAST

Crop water use was below average due to low temperatures and wet weather to start the week. Crops did put on noticeable growth and soil moisture dropped accordingly. Hay and pasture crops used about 1 inch of water. Water use will take off like a rocket this week with warm, sunny weather. 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 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>1.1</b>	<b>1.3</b> (1.1 - 1.5)	<b>.19</b>	<b>5.0</b>
<b>PASTURE</b>	<b>0.9</b>	<b>1.1</b> (1.0 - 1.3)	<b>.18</b>	<b>4.7</b>
<b>SPRING GRAINS</b>	<b>0.2</b>	<b>0.6</b> (0.5 - 0.7)	<b>.09</b>	<b>1.1</b>
<b>WINTER WHEAT</b>	<b>1.2</b>	<b>1.4</b> (1.2 - 1.5)	<b>.20</b>	<b>5.3</b>
<b>LAWNS</b>	<b>1.0</b>	<b>1.2</b> (1.1 - 1.4)	<b>.17</b>	<b>5.1</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)

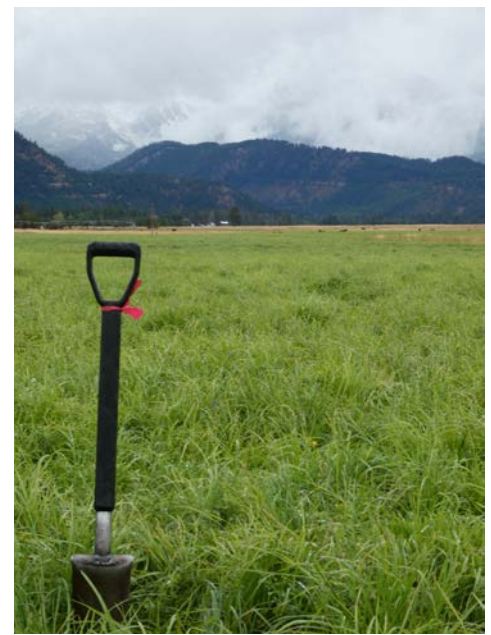
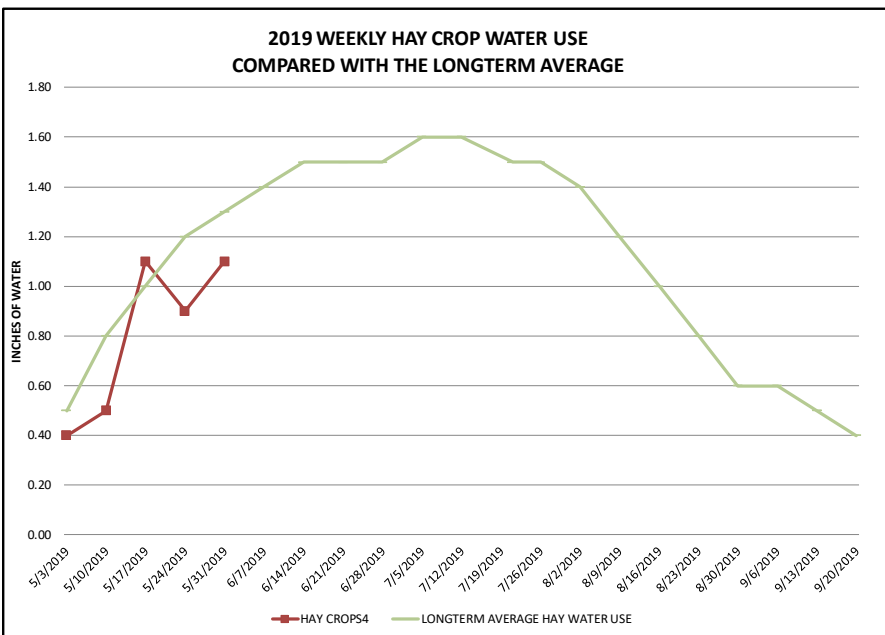
WEEK ENDING	RAIN <sup>1</sup>	2019 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE POTENTIAL CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK 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	0.25	1.20	1.00	1.30	1.40	0.90
6/7/2019								1.40	1.50	1.00
6/14/2019								1.50	1.70	1.00
6/21/2019								1.50	1.90	1.10
6/28/2019								1.50	2.00	1.20
7/5/2019								1.60	2.10	1.30
7/12/2019								1.60	2.00	1.20
7/21/2019								1.50	2.00	1.20
7/26/2019								1.50	2.20	1.10
8/2/2019								1.40	1.70	1.00
8/9/2019								1.20	1.50	0.90
8/16/2019								1.00	1.30	0.70
8/23/2019								0.80	1.00	0.50
8/30/2019								0.60	0.80	0.40
9/6/2019								0.60	0.70	0.30
9/13/2019								0.50	0.70	0.30
9/20/2019								0.40	0.60	0.20
9/30/2019								0.40	0.60	0.20
<b>TOTAL</b>	<b>3.35</b>	<b>5.00</b>	<b>4.70</b>	<b>1.10</b>	<b>0.75</b>	<b>5.30</b>	<b>5.10</b>	<b>24.80</b>	<b>31.40</b>	<b>17.20</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.

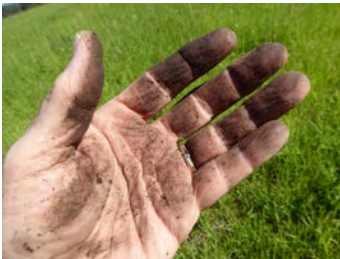
<sup>4</sup> Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.





## SOIL MOISTURE - HOW MUCH RAIN DID YOU GET?

Crop water use was about an inch this week for most crops. Rainfall made up for all of this in some fields, especially near Ovando. Soil moisture levels dropped elsewhere according to how much rain fell. Some locations had almost no effective rain and saw soil moisture fall a full inch. Many folks began irrigating this week and most should start soon. At this point it should take 1-3 inches to fill up most hay and pasture root zones. Remember the near 1 inch of crop water use this next week too.



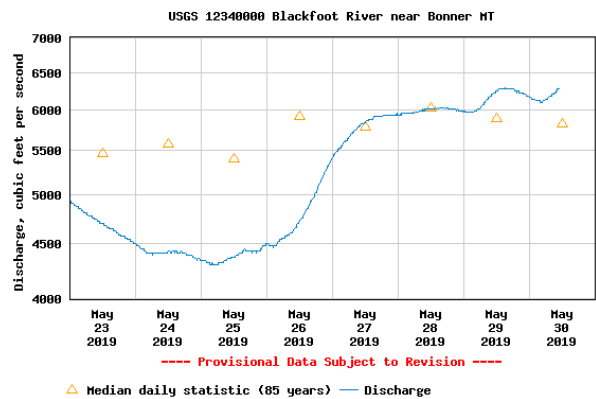
Soil near 100% of its water holding capacity forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a shiny surface. Bouncing the soil in the hand usually brings water to the surface. Soil near 75% of its water holding capacity also forms a ball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

content and irrigation options.

## STREAMFLOWS

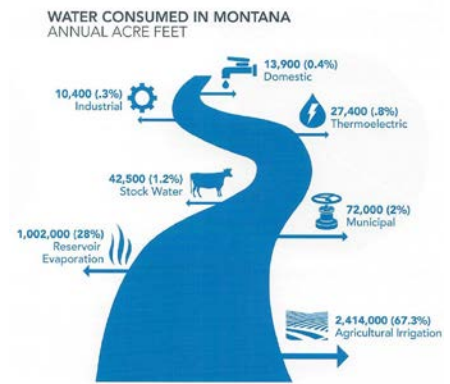
Rainfall boosted Blackfoot river flows at Bonner this week to 6270 CFS which is slightly above average (6040 CFS). The Highest flow on this date was 13,600 (1899) and the lowest was 1060 CFS (1941).

Flood risks seem over. The snowpack has dropped significantly and late season drought is still possible. Predictions for the next 30 days are for average temperatures and rainfall. The 90 days prediction says warmer and wetter than average.



## MONTANA STATE WATER PLAN

Wonder where all the water in Montana comes from and where it goes? It turns out to the Pacific, Atlantic and Arctic Oceans. The Montana State Water Plan is a comprehensive overview of water movement, water use, water management, water rights and the future of water in our state. This document helps put things in perspective for irrigators and other water uses alike. See it at: <http://www.montanawatercenter.org/news/2015montanawaterplan>



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. Some years you better start up now.



### 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.