

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday July 22, 2022



Blackfoot watershed croplands had little or no rain this week and mostly sunny skies. Next week will be sunny again with very warm temperatures. It's been great weather for harvesting what looks like one of the best hay crops ever. Soil moisture fell about 2 inches this week unless irrigated. Crop water use was above average and will be similar next week. Remember that water use drops for two weeks in fields harvested for hay. Blackfoot streamflows are dropping but remain about average for this time of year. We have avoided drought so far.

### MORE GOOD HAYING WEATHER

Rain was a scarce commodity this week with very warm temperatures and sunny skies. Next week looks like more good haying weather for those not yet finished. High temperatures next week will be in the upper 80s with lows in the 40s and 50s. The 30-day forecast says average rainfall and temperatures. The 90-day forecast says below average rainfall and above average temperatures.



*Your own rain gauge is your best source of rainfall information.*

### CROP WATER USE - ABOVE AVERAGE WITH HOT WEATHER

This week crop water use was above average for this time of year and will remain above average next week due to hot temperatures and abundant sunshine. Most crops will use about 2 inches of soil moisture next week (see chart below) which should be about the peak use. These crop water use figures are reduced by 2/3 the first week after cutting hay and by 1/3 the second week.

<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>1.9</b>	<b>1.8</b>	<b>.26</b>	<b>15.2</b>
<b>PASTURE</b>	<b>1.6</b>	<b>1.5</b>	<b>.21</b>	<b>12.9</b>
<b>SPRING GRAINS</b>	<b>2.1</b>	<b>2.0</b>	<b>.29</b>	<b>12.5</b>
<b>WINTER WHEAT</b>	<b>1.0</b>	<b>0.8</b>	<b>.11</b>	<b>14.8</b>
<b>LAWNS</b>	<b>1.8</b>	<b>1.7</b>	<b>.24</b>	<b>14.6</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 – note in 2010-13 we started our seasonal total on May 1 but since include April

### SOIL MOISTURE- DROPS 2 INCHES UNLESS IRRIGATED OR CUT

Soil moisture dropped by about 2 inches this week unless irrigated. Soil moisture will drop about the same next week without irrigation. Continue to check your soil moisture and refill with at least as much as the weekly crop water use. Boost soil moisture before hay cutting and as soon as you can after to prevent crop damage. Remember that crop water use drops by 2/3 the week after cutting and by 1/3 the second week after cutting. Haying is a good time to replenish soil moisture while crop water use is reduced and there is less foliage to catch and evaporate water.

The table on Page 1 provides a quick summary of crop water use this last week and an estimate for next week. The table and chart below summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead. This table and chart will be updated weekly all season.

<b>BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL &amp; CROP WATER USE</b> (INCHES OF WATER)										
WEEK ENDING	RAIN <sup>1</sup>	2022 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
APRIL	1.25	1.00	1.00	0.00	0.00	1.00	1.00			
5/6/2022	0.25	0.70	0.60	0.10	0.00	0.80	0.80	0.70	1.00	0.40
5/13/2022	0.01	0.80	0.70	0.20	0.00	0.90	0.90	0.80	1.10	0.60
5/20/2022	0.10	0.90	0.80	0.40	0.20	1.00	0.90	0.90	1.20	0.70
5/27/2022	0.20	0.90	0.80	0.70	0.50	1.00	0.90	1.00	1.30	0.70
6/3/2022	0.10	1.00	0.80	0.80	0.60	1.10	0.90	1.10	1.50	0.80
6/10/2022	0.50	1.00	0.80	0.90	0.70	1.10	0.90	1.20	1.70	0.80
6/17/2022	0.75	1.00	0.80	1.10	0.90	1.10	0.90	1.25	1.90	0.90
6/24/2022	1.00	1.30	1.10	1.30	1.20	1.30	1.20	1.30	2.00	1.00
7/1/2022	0.01	1.70	1.40	1.60	1.70	1.70	1.60	1.40	2.00	1.00
7/8/2022	0.75	1.40	1.20	1.60	1.60	1.50	1.30	1.60	2.10	1.10
7/15/2022	0.01	1.60	1.30	1.70	1.70	1.30	1.50	1.65	2.20	1.10
7/22/2022	0.01	1.90	1.60	2.10	2.10	1.00	1.80	1.70	2.20	1.10
7/29/2022								1.70	2.00	1.10
8/5/2022								1.50	1.80	1.00
8/12/2022								1.40	1.70	1.00
8/19/2022								1.30	1.60	0.90
8/26/2022								1.20	1.40	0.90
9/2/2022								1.15	1.40	0.70
9/9/2022								1.00	1.30	0.60
9/16/2022								0.90	1.20	0.50
9/23/2022								0.80	1.10	0.50
9/30/2022								0.70	1.00	0.40
<b>TOTAL</b>	<b>3.69</b>	<b>15.20</b>	<b>12.90</b>	<b>12.50</b>	<b>11.20</b>	<b>14.80</b>	<b>14.60</b>	<b>26.25</b>	<b>34.70</b>	<b>17.80</b>

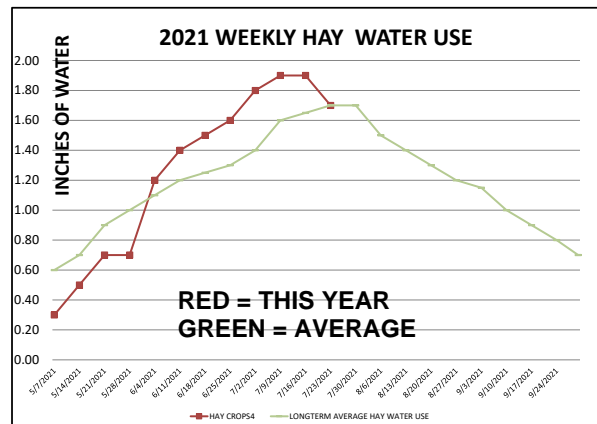
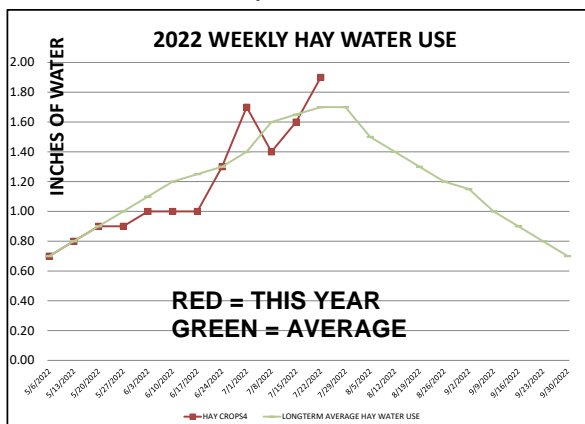
<sup>1</sup> Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April,May and Sept, 0.15-June and August, 0.2-July)  
(This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

<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.

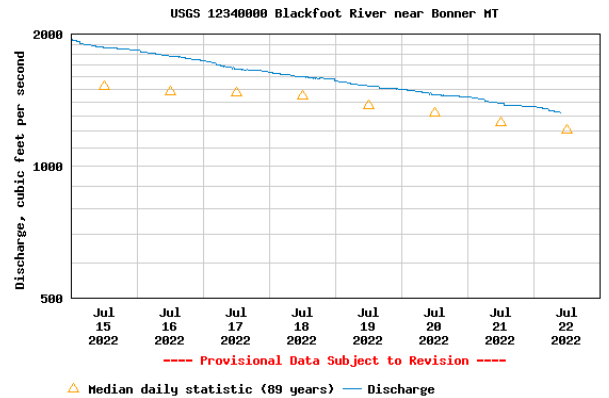
<sup>4</sup> Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.

### 2022 Crop Water Use Exceeds Last Year For the First Time This Season



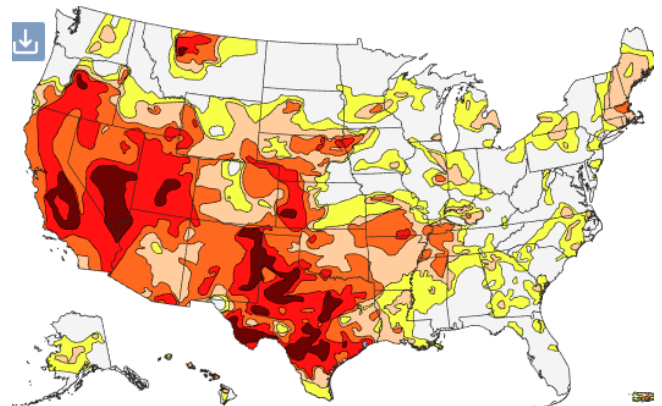
## STREAMFLOW

The Blackfoot river flow at Bonner is about average. This is great news since recent years have seen below average flows that quickly lead to drought restrictions. Today's flow is **1,320 CFS** (average for this date is 1,330 CFS). 1899 saw the highest flow at 4,340 CFS while the lowest flow was 496 CFS in 1988. Blackfoot river flows are still predicted to be about normal for the rest of this season.

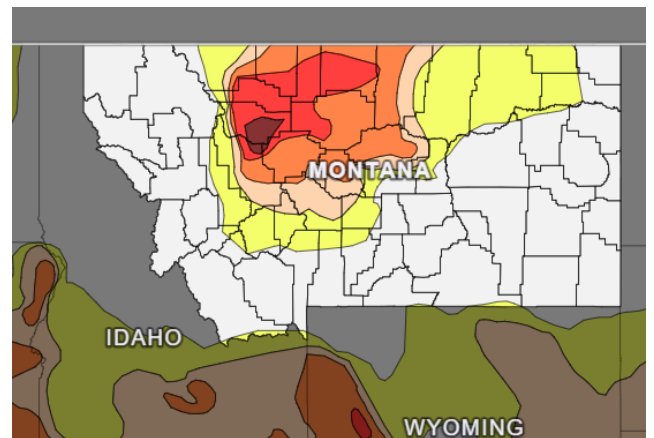


## DROUGHT HAS MISSED US THIS YEAR

While most of the west has suffered extreme drought this year we have been lucky to have above average snowpack and streamflows in 2022. The news across the west has been filled with stories of cities, irrigation districts and individual farms cutting back or cutting off water allocations. Rationing and complete shutoffs have been common even across areas that have been farmed and irrigated for over a century. Temperature records have been broken across the west, the country and the world.



This week's drought map shows only a small portion of north-central Montana in Exceptional or Extreme Drought (dark red and red). Last year at this time most of the state was listed in these categories. Only the upper Blackfoot watershed is listed as Exceptionally Dry at this time (yellow). This may be a bumper year for second cuttings and an opportunity for late-season reseeding if streamflows continue to be good.



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 WATERSHED 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 watershed, 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.