

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday May 6, 2022



Welcome to the 2022 irrigation season. Ditches are running and some sprinklers are already going throughout the drainage after a dry March and April. Once again, we will provide weekly summaries of weather and crop water use along with predictions for the upcoming week. Other topics will include streamflow, drought conditions and soil health. Please send us any ideas or questions you have on these or other subjects. We will respond and share them with everyone. Soil moisture levels at the start of this growing season are below average in most fields with the surface layer only filled to half its water holding capacity. Remember to account for this and fill up soils during early irrigations.

### WEATHER - COOL AGAIN NEXT WEEK

This week will start with a little snow over the weekend, especially at higher elevations. The rest of the week will be cool with a mix of clouds and only a little rain. Highs will mostly be in the 50s and lows in the 30s. The 30-day forecast says **above average rainfall and below average temperatures**. The 90-day forecast says the opposite - below average rainfall and above average temperatures.



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

### CROP WATER USE - LOW WITH COOLER, WETTER WEATHER

May has begun with a little moisture and cool conditions. Crop water use was low this week and looks to continue that way until warmer temperatures return later next week. Note that in the early season things are more variable across Blackfoot croplands since low elevations and coarser soils warm up quicker. In these early reports, we list a range of crop water use to account for this variation. Crop water use will even out when crops start actively growing across the entire drainage.

<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>
HAY CROPS	0.4-0.5	0.5-0.7	.07-.10	1.7
PASTURE	0.5-0.6	0.5-0.6	.07-.09	1.6
SPRING GRAINS	0.0	0.0-0.2	.00-.03	0.2
WINTER WHEAT	0.5-0.7	0.5-0.8	.07-.11	1.8
LAWNS	0.5-0.7	0.5-0.8	.07-.11	1.8

<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

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.

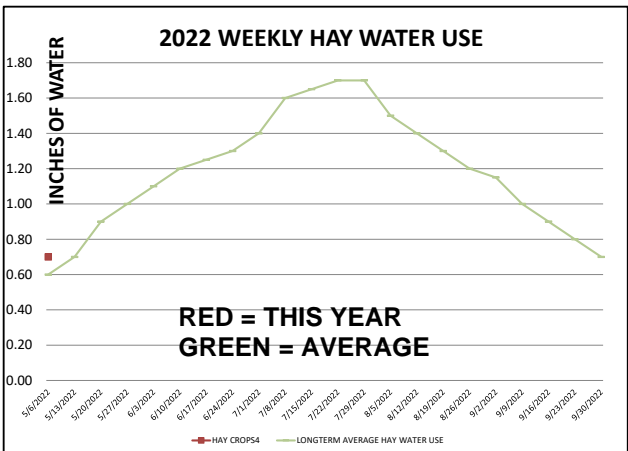
<b>BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL &amp; CROP WATER USE (INCHES OF WATER)</b>											
WEEK ENDING	RAIN <sup>1</sup>	2022 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>			
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING 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	0.60	1.00	0.30	
5/13/2022								0.70	1.10	0.40	
5/20/2022								0.90	1.20	0.50	
5/27/2022								1.00	1.30	0.50	
6/3/2022								1.10	1.50	0.60	
6/10/2022								1.20	1.70	0.70	
6/17/2022								1.25	1.90	0.70	
6/24/2022								1.30	2.00	0.80	
7/1/2022								1.40	2.00	0.90	
7/8/2022								1.60	2.10	1.00	
7/15/2022								1.65	2.20	1.00	
7/22/2022								1.70	2.20	1.00	
7/29/2022								1.70	2.00	1.00	
8/5/2022								1.50	1.80	0.90	
8/12/2022								1.40	1.70	0.80	
8/19/2022								1.30	1.60	0.80	
8/26/2022								1.20	1.40	0.70	
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>0.25</b>	<b>1.70</b>	<b>1.60</b>	<b>0.10</b>	<b>0.00</b>	<b>1.80</b>	<b>1.80</b>	<b>26.05</b>	<b>34.70</b>	<b>15.30</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.

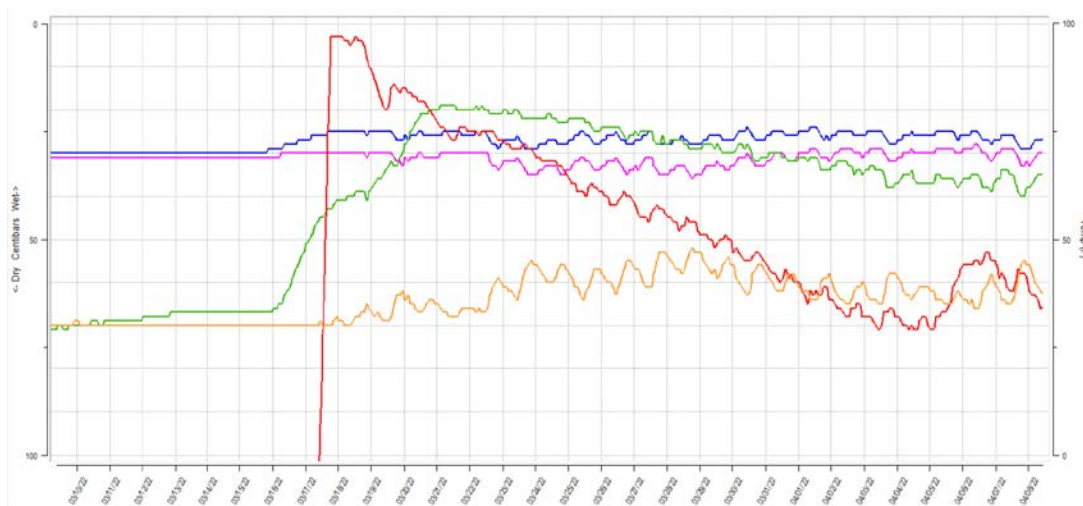


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## SOIL MOISTURE - BELOW AVERAGE!

Soil moisture levels throughout the drainage this week were about the same as this time last year. Most soils are filled to 50 - 75% of their water holding capacity throughout the 3-foot root zone. This means irrigators should check soil moisture levels and fill up soils during early irrigations. If planting new crops, watch surface moisture to ensure good establishment. Now is the easiest time to fill up soils to their full water holding capacities while crop water use is low, crops are short and weather is cool. Most soils could use an extra 2-3 inches to fill them up.

The chart below is a typical example of soil moisture this spring in hay fields. The red line is the moisture content of the surface foot, green the second foot, blue the third and purple the fifth. The orange line is soil temperature in the first foot. The soil sensors don't start working in the spring until the soil temperature rises above 32F which occurred in mid-March. The top two feet of soil (red and green) show a steady decline in soil moisture through our warm, dry March. This illustrates how soils dry out between snowmelt and the active growing season in May unless we get significant rainfall. The chart shows a slight bump in moisture from an early April snow/rain.



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 dark stain or shiny surface.



Soil near 50% of its water holding capacity may form a weak ball but leaves little moisture on the hand. Soil at 25% or less of its water holding capacity does not form a ball when squeezed. It feels and looks dry. If sandy or loamy, it crumbles easily, if high in clay it forms a hard lump. Call, text or email anytime if you have questions about evaluating your soil moisture content and irrigation options.

# WEEKLY TIPS

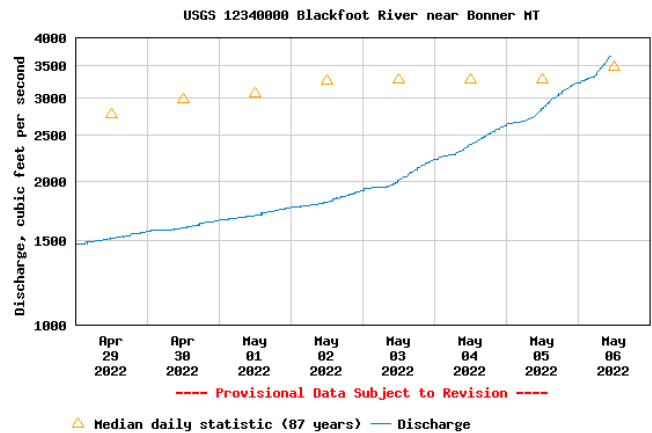
## SNOWPACK AND WATER SUPPLY

Blackfoot drainage snowpack is at 96% of average today which is similar to the past two years at this time. April precipitation in the Blackfoot was 68% of normal which combined with almost no rain in March has left surface soils drier than average. Reservoir storage is good at 82% of normal compared with 115% last year. Blackfoot river flows are predicted to be normal this season. Last year the prediction at this time was for above-normal flows but drought conditions dropped late season flows below normal.



## STREAMFLOW

The Blackfoot river flow at Bonner is 3,670 CFS today which is near average for this date (3,910 CFS) and about the same as last year. 2018 set the highest flow record at 13,800 CFS while the lowest flow on this date was 700 CFS in 1905. Weather predictions for the next 30 days are for below average temperatures and above average rainfall which should help maintain streamflows. Predictions for the next 90 days are for above average temperatures and below average and rainfall.



## USE ABUNDANT EARLY-SEASON WATER TO FILL UP SOILS

During early season irrigations is the perfect time to fill up your soil to its full water-holding capacity. Use a soil probe, shovel or moisture sensors to confirm that you have irrigated deeply enough to encourage deep root growth. Most local ag soils hold 4 (sandy soils) to 7 (clay soils) inches of stored soil moisture in the top 3 feet of soil and 6 to 11 inches in the top 5 feet. This stored moisture can last weeks and prevent crop loss during breakdowns, vacations or other distractions.

This year on May 1 most local ag soils were only about half full in the surface three feet if they had not yet been irrigated. This means they could use an extra 2-3 inches of water to fill them up. How much rain do you expect to get?



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.