

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday May 20, 2022



With snow in the forecast again, it feels more like March than May and some folks have not yet irrigated. Crop water use and soil moisture levels remain near or below average. It's still the best time to boost moisture levels while temps are cool, crop water use is low and water is abundant. Most irrigators will need to apply an extra 2-3 inches of water to fill up soils during early irrigations. Check how deep you are irrigating with a probe, shovel or moisture sensors to ensure you fully moisten the crop root zone. Lead your roots to deeper depths by irrigating deeply. Let us know your ideas for other information you would like in these reports.

WEATHER - COOL AGAIN NEXT WEEK

Most of the Blackfoot watershed had only a trace of rain this week and cool temperatures. There are a few snowflakes forecast this next week with a mix of sun and clouds. Highs will be in the 60s 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 - BELOW TO AVERAGE WITH COOL WEATHER

May continues with little moisture and cool conditions on local croplands. Crop water use was low this week and looks to continue that way until warmer temperatures return. 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 watershed.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	0.6-0.9	0.8-1.0	.11-.14	3.4
PASTURE	0.6-0.8	0.7-0.9	.10-.13	3.1
SPRING GRAINS	0.0-0.4	0.0-0.6	.00-.01	0.7
WINTER WHEAT	0.7-1.0	0.9-1.1	.13-.16	3.7
LAWNS	0.7-0.9	0.8-1.0	.11-.14	3.6

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

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

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

BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

WEEK ENDING	RAIN ¹	2022 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	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								1.00	1.30	0.70
6/3/2022								1.10	1.50	0.80
6/10/2022								1.20	1.70	0.80
6/17/2022								1.25	1.90	0.90
6/24/2022								1.30	2.00	1.00
7/1/2022								1.40	2.00	1.00
7/8/2022								1.60	2.10	1.10
7/15/2022								1.65	2.20	1.10
7/22/2022								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
TOTAL	0.36	3.40	3.10	0.70	0.20	3.70	3.60	26.25	34.70	17.80

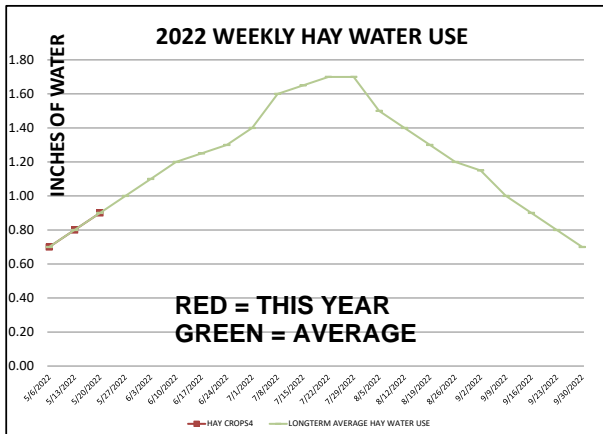
¹ Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April, May and Sept, 0.15-June and August, 0.2-July) (This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

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

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

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

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.



SOIL MOISTURE - STILL BELOW AVERAGE UNLESS IRRIGATED!

Soil moisture levels throughout the watershed this week continue to be average or slightly below unless irrigated. Irrigators should check soil moisture levels and fill up soils during early irrigations. This 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.



Soil Near 100% - Hand is wet, forms a firm ball when squeezed



Soil Near 50% - forms a weak ball with little moisture on the hand



Soil at 0% looks dry and feels dry

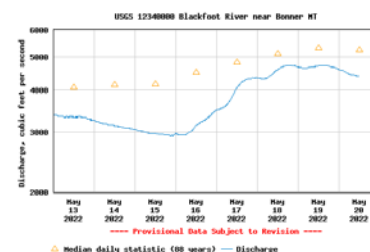
SNOWPACK AND WATER SUPPLY

Blackfoot watershed snowpack rose from 107% of average last week to **120%** due to cool weather and a little snow up high. Precipitation in the last 30 days was below average. Reservoir storage is good and Blackfoot river flows are predicted to be about normal this season. Last year the prediction at this time was for above-normal flows but drought conditions still dropped late season flows below normal.



STREAMFLOW

The Blackfoot river flow at Bonner is **4,380 CFS today** which is below the average for this date of 5,720 CFS. 2018 had the highest flow record at 12,700 CFS while the lowest flow on this date was 1180 CFS in 1941.



IRRIGATION SYSTEM EFFICIENCY TESTING (PUMP TESTS)

The Challenge is once again offering Irrigation System Efficiency Tests for irrigators. These tests evaluate the efficiency of the entire irrigation system from pump intake to sprinklers. In the past, irrigators have seen their electric bills go down dramatically while pumping the same amount of water. Sometimes folks get the wrong pump or impeller. Sometimes systems contract or expand over time. Often, technology changes require lower pressures from newer nozzles and spinners.

We are fortunate to welcome John Heffernan back who has been evaluating systems from Montana to Washington for over 30 years. His work in the Blackfoot watershed and elsewhere has both improved the quality of irrigation and saved folks a ton of money in electricity.



You may have a new system, aging system or changes in some components. You may have had a test before. If you think you would like to get your system tested contact Jennifer at the number below or email: jennifer@blackfootchallenge.org.

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

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.