

BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

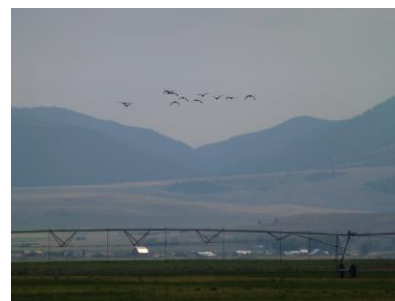
Friday August 30, 2024



We had a mix of warm and cool temperatures this week with almost no rain. Next week will be warmer with only a slight chance of rain. **Crop water use was similar to last week (1 inch) and will be similar next week with.** Blackfoot River flows remain in the 400 CFS range and continue to be far below normal. Flows have had help from irrigators implementing drought plans and from small rainstorms. Driving throughout the watershed lately it's obvious that irrigators are sacrificing peak crop production to help maintain streamflows - thanks to all those irrigators! Please send us any ideas or questions to include with these reports. We will respond and share them with everyone.

WARMER WEATHER WITH LITTLE RAIN

It was cooler this week with only some scattered rain in very small amounts. Croplands in the watershed had 0 to ¼ inch of rain. Next week will be warmer with only a slight chance of rain. Highs will be in the 80s and 90s and lows in the 40s. The 30-day forecast says below average rainfall and above average temperatures. The 60-day forecast says average rainfall and above average temperatures.



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

CROP WATER USE - NEAR AVERAGE AGAIN THIS WEEK

Crop water use was moderate last week and again below average. **Most crops used about 1 inch of water this week and will use about the same next week.**

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.3	1.3	.19	22.4
PASTURE	1.1	1.1	.16	19.4
SPRING GRAINS	0.7	0.2	.03	18.7
WINTER WHEAT	0.0	0.0	.00	20.1
LAWNS	1.2	1.2	.17	22.2

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

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.

BLACKFOOT 2024 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

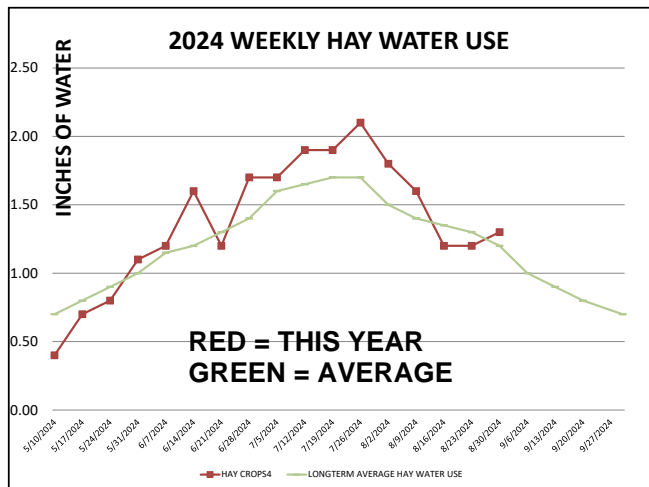
WEEK ENDING	RAIN ¹	2024 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
5/10/2024	0.50	0.40	0.50			0.50	0.60	0.70	1.00	0.40
5/17/2024	0.10	0.70	0.80			1.00	1.00	0.80	1.10	0.60
5/24/2024	1.00	0.80	0.80	0.30	0.20	0.90	0.90	0.90	1.20	0.70
5/31/2024	0.50	1.10	0.90	0.50	0.40	1.20	1.20	1.00	1.30	0.70
6/7/2024	0.10	1.20	1.00	0.70	0.50	1.30	1.20	1.15	1.50	0.80
6/14/2024	0.01	1.60	1.40	1.10	0.90	1.70	1.50	1.20	1.70	0.80
6/21/2024	0.25	1.20	1.10	1.00	0.90	1.30	1.20	1.30	1.90	0.90
6/28/2024	0.10	1.70	1.40	1.60	1.40	1.80	1.60	1.40	2.00	1.00
7/5/2024	0.01	1.70	1.40	1.70	1.70	1.90	1.60	1.60	2.10	1.10
7/12/2024	0.01	1.90	1.60	2.10	2.10	2.10	1.80	1.65	2.20	1.10
7/19/2024	0.00	1.90	1.60	2.10	2.10	2.10	1.80	1.70	2.20	1.10
7/26/2024	0.25	2.10	1.80	2.50	2.50	1.80	2.00	1.70	2.20	1.10
8/2/2024	0.25	1.80	1.50	1.80	2.10	1.30	1.70	1.50	2.20	1.00
8/9/2024	0.50	1.60	1.30	1.00	1.60	0.70	1.50	1.40	2.20	1.00
8/16/2024	0.40	1.20	1.00	0.50	1.20	0.20	1.20	1.35	2.00	0.90
8/23/2024	0.30	1.20	1.00	0.00	1.10	0.00	1.10	1.30	2.00	0.90
8/30/2024	0.10	1.30	1.10	0.00	0.70	0.00	1.20	1.20	1.80	0.90
9/6/2024								1.00	1.40	0.60
9/13/2024								0.90	1.40	0.50
9/20/2024								0.80	1.20	0.50
9/30/2024								0.70	1.00	0.40
TOTAL	4.38	23.65	20.45	16.90	19.40	20.05	23.35	25.25	35.60	17.00

¹ Average across watershed (50-80% gets to the crop depending on irrigation method, weather, evaporation from crop and soil surfaces)

² This years potential water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Varies across watershed.

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

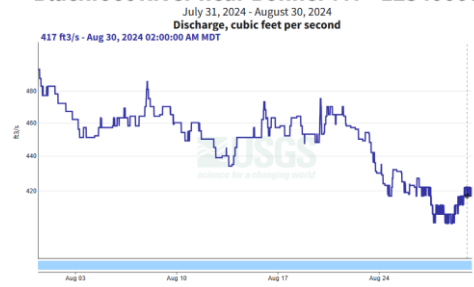
⁴ Hay Crop water use drops from these figures approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



STREAMFLOWS STILL VERY LOW

Blackfoot River flows continue to bounce around in the 400 CFS range with small increases from rainstorms. There are still no large rain events forecast that could boost us out of drought conditions. However, cooler water temperatures have made it slightly better for fish. Today the flow at Bonner is 417 CFS compared to an average of 694 CFS for this date. The highest flow on this date was 1,420 CFS in 1899 while the lowest was 334 CFS in 1988. Weather predictions for the next 30 days are for below average rainfall and above average temperatures so streamflows will continue well below average.

Blackfoot River near Bonner MT - 12340000



SOIL HEALTH MEANS GOOD MENTAL AND PHYSICAL HEALTH

Soil and soil health is getting more and more respect these days, which warms my soil scientist heart. Recent articles in Psychology Today and other publications reveal the importance of healthy soils for the human mind and body.

Each teaspoon of soil contains more microorganisms than there are people on the planet. Each of this vast array of microbes has a role to play in the soil and in the human metabolism to make important nutrients available to plants and humans. Direct contact with soil can increase your body's microbial population but most of us don't eat dirt. Feeling the soil (as when checking for moisture content) or walking barefoot also increases our exposure to soil microbes. Most of us however, get these benefits mainly from food grown in healthy soil. The more diverse and robust our gut microbes are, the better we can process and use the foods we eat.



Since 1950, the nutrient content of our food in the US has dropped up to 38% according to one study. The main reasons are directly related to soil health, especially lower organic matter content, reduced microbial populations and the use of fertilizers or other ag chemicals. These nutrients are essential for good mental as well as physical health.

Healthy soils are also recognized for their ability to grow robust abundant vegetation including ag crops, rangeland and forests. Folks in Europe are encouraging people to visit healthy forests grown from healthy soils just for the peace and calm which promotes mental health.

Here is one example of recent articles on this subject:
[Healthy soils are good for your gut, brain and wellbeing – here's why \(theconversation.com\)](#)



For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, Soil Scientist, 406-240-7798 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, streamflows and drought conditions.
- 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- 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.