

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 29, 2023



Here is the final weekly irrigation report for the 2023 season. As always, I will prepare a summary of the year so send me your thoughts on how it went for you. Otherwise, have a great winter! Blackfoot watershed croplands started out mostly sunny this week then has some mixed clouds and a few scattered showers. Next week will be cooler with rain and some snow up high. **Crop water use dropped to a seasonal ½ inch last week and will be lower next week.** The watershed is still listed as *Abnormally Dry* and Blackfoot River flows continue to fluctuate around 600 CFS. The Drought Committee has decided to end Drought Restrictions due to a prediction for more rain and cooler temperatures combined with less irrigation. Send us your ideas or questions about anything you want to hear about related to irrigation, soil health, water quality, or other subjects. We will respond and share them with everyone.

WEATHER - A GOOD YEAR!

This week most Blackfoot watershed croplands had sunny skies to start then clouds and scattered showers (mostly in the last 2 days). Next week is going to be cooler with more rain and some snow on the peaks. Highs will be in the 50s and 60s and lows in the 30s. 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 always your best source of rainfall information!

CROP WATER USE - 1/2 INCH THIS WEEK (AVERAGE)

Crop water use dropped this week to about ½ inch which is average for this time of year. Next week crops will use slightly less. Irrigation has dropped off across the watershed due to cooler temperatures, small grains maturing, and the lower water use inherent to pasture (less dense vegetation due to grazing removal).

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	0.6	0.5	.07	25.5
PASTURE	0.4	0.3	.04	21.3
SPRING GRAINS	0.0	0.0	.00	20.9
WINTER WHEAT	0.0	0.0	.00	18.0
LAWNS	0.5	0.4	.06	25.6

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

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.

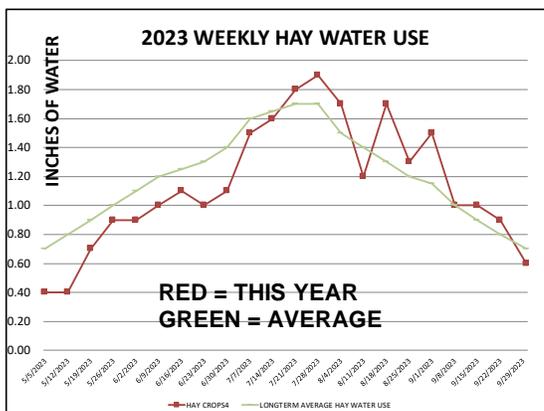
BLACKFOOT 2023 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)										
WEEK ENDING	RAIN ¹	2023 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.25	0.25	0.25	0.00	0.00	0.25	0.25			
5/5/2023	0.10	0.40	0.40	0.00	0.00	0.50	0.40	0.70	1.00	0.40
5/12/2023	1.50	0.40	0.50	0.20	0.00	0.60	0.50	0.80	1.10	0.60
5/19/2023	0.25	0.70	0.70	0.30	0.00	0.80	0.80	0.90	1.20	0.70
5/26/2023	0.75	0.90	0.80	0.50	0.30	1.00	1.00	1.00	1.30	0.70
6/2/2023	0.25	0.90	0.80	0.60	0.40	1.00	0.90	1.10	1.50	0.80
6/9/2023	0.25	1.00	0.90	0.80	0.60	1.10	1.00	1.20	1.70	0.80
6/16/2023	0.40	1.10	0.90	1.00	0.80	1.20	1.00	1.25	1.90	0.90
6/23/2023	0.25	1.00	0.80	1.00	0.90	1.10	0.90	1.30	2.00	1.00
6/30/2023	0.40	1.10	0.90	1.20	1.10	1.20	1.00	1.40	2.00	1.00
7/7/2023	0.01	1.50	1.20	1.70	1.60	1.70	1.40	1.60	2.10	1.10
7/14/2023	0.01	1.60	1.30	1.70	1.60	1.70	1.50	1.65	2.20	1.10
7/21/2023	0.01	1.80	1.50	2.00	2.00	1.80	1.70	1.70	2.20	1.10
7/28/2023	0.01	1.90	1.60	2.20	2.20	2.00	1.80	1.70	2.20	1.10
8/4/2023	0.10	1.70	1.50	2.10	2.10	1.25	1.70	1.50	2.20	1.00
8/11/2023	1.00	1.20	0.90	1.40	1.40	0.50	1.10	1.40	2.20	1.00
8/18/2023	0.01	1.70	1.40	1.50	1.50	0.25	1.60	1.30	2.00	0.90
8/25/2023	0.50	1.30	1.10	1.20	1.20	0.00	1.30	1.20	1.80	0.90
9/1/2023	0.50	1.50	1.10	0.50	0.50	0.00	1.40	1.15	1.60	0.70
9/8/2023	0.35	1.00	0.90	0.00	0.00	0.00	1.00	1.00	1.40	0.60
9/15/2023	0.00	1.00	0.70	0.00	0.00	0.00	0.90	0.90	1.40	0.50
9/22/2023	0.50	0.90	0.70	0.00	0.00	0.00	0.90	0.80	1.20	0.50
9/30/2023	0.25	0.60	0.40	0.00	0.00	0.00	0.50	0.70	1.00	0.40
TOTAL	7.40	25.45	21.25	19.90	18.20	17.95	24.55	26.25	37.20	17.80

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.



WEEKLY TIPS

STREAM FLOWS

Stream flows at Bonner dropped this week when it was sunny then rose again with rain later in the week. Flow today at Bonner is **624 CFS** while the average for this date is 635 CFS. The highest flow was 1,200 CFS in 1965 and the lowest flow was 363 CFS in 1994. Flow peaked this year on May 7 at 10,400 CFS. Flows are expected to pick up next week with more rain, cooler temperatures, and less irrigation.

Blackfoot River Near Bonner MT - 12340000

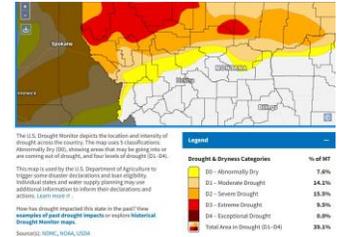
September 22, 2023 - September 29, 2023

Discharge, cubic feet per second



DROUGHT RESTRICTIONS END!

The Drought Monitor still lists 39% of Montana in drought conditions and the Blackfoot watershed is still listed as *Abnormally Dry*. However, with rain and cool temperatures predicted for the immediate future, this should change quickly. The Drought Committee has decided to end Drought Restrictions this week.



FALL IRRIGATION

Each fall I get questions about the usefulness of fall irrigation for next year's crops. For most folks, I don't think fall irrigation is enough of a benefit to justify the costs or the negative effects on stream flows. However, there are specific circumstances where fall irrigation **IS** worthwhile. Those who are most likely to benefit from fall irrigation have clay soils because they hold the most water. Sandy and gravelly subsoils (at right) generally do not hold enough water to make fall irrigation affect next years growth.



If you want to store water for growth next spring you have to store it deep enough that it will still be there when active growth starts about May. This generally means below 1 foot since the surface foot of soil can dry out between snowmelt and active growth in May. If you can't apply enough water to wet up the soil below 1 foot you are likely wasting your time. And of course, you must have water available and a source that won't accentuate drought concerns. Late irrigation also presents some hazards from freezing if the weather catches you.

IRRIGATION TOURISM?

If you are traveling this winter and want to grab a "busman's holiday" there are irrigation-related attractions across the country. Many ag universities, government agencies and individual irrigation districts have irrigation museums, displays and demonstration projects (just google irrigation for your locale). A few examples are:

- **Huntley Project Museum**, Huntley, MT
- **National Irrigation Museum**, Fresno, CA (another one in India)
- **Pueblo Grande Ruin and Irrigation Sites**, Phoenix, AZ
- **Indus Basin Irrigation System**, the largest irrigation system on the planet serving Afghanistan, China, India, and Pakistan providing water to over 45 million acres of farmland.

For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net