BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday August 9, 2024

Finally, some cooler temperatures and a little rain! Next week will remain cooler with the potential for showers and thunderstorms. **Crop water use remains above average for the 7th week in a row**. Most crops used about 1½ inches of water and will use slightly less next week. **Blackfoot River flows remain below 500 CFS this week and continue to fall far below normal.** The good news is that water temperatures have cooled prompting FWP to discontinue **Hoot Owl Restrictions**. Flows may get some help as irrigators shut off for haying and drought plans are implemented. Driving throughout the watershed today I only saw about ¼ the systems running that would be in a normal year – 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.

WEATHER: SLIGHTLY COOLER NEXT WEEK!

It was 15-20 degrees cooler this week and will be similar next week. Most croplands in the watershed has ¼ to ¾ inch of rain this week. There is a chance of rain and thunderstorms again next week. High temps next week will be the 70s and 80s and lows in the 40s and 50s. The 30-day and 90-day forecasts still predict **below average rainfall and above average temperatures.**

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

CROP WATER USE – 6 WEEKS ABOVE AVERAGE

This was the 6th week of above-average crop water use due to very high temperatures (graphs on page 1 & 2). This is the longest period of above-average crop water use in the 15 years of our weekly irrigation reports. **Most crops used 1½ to 2 inches of water this week and will use slightly less next week**. Remember that hay water use is reduced from its potential (below) by 2/3 the first week after cutting and 1/3 the second week.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL[1]	NEXT 7 DAYS DAILY AVE[2]	SEASON TOTAL[3]
HAY CROPS	**1.6**	**1.5**	.21	20.0
PASTURE	**1.3**	**1.2**	.17	17.4
SPRING GRAINS	**1.6**	**1.2**	.17	16.4
WINTER WHEAT	**0.7**	**0.2**	.03	19.9
LAWNS	**1.5**	**1.4**	.20	19.9

[1]Expected water use over the next week (range if weather becomes cooler or hotter than expected)
[2]Expected average daily water use over the next week (compare this with your soil moisture content)
[3]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.

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

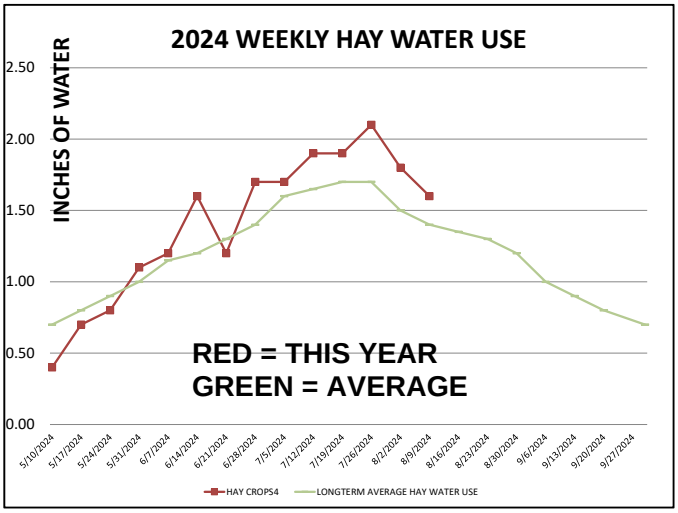
	RAIN[1]	2024 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE WEEKLY CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
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								1.35	2.00	0.90
8/23/2024								1.30	2.00	0.90
8/30/2024								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	3.58	19.95	17.35	16.40	16.40	19.85	19.85	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.

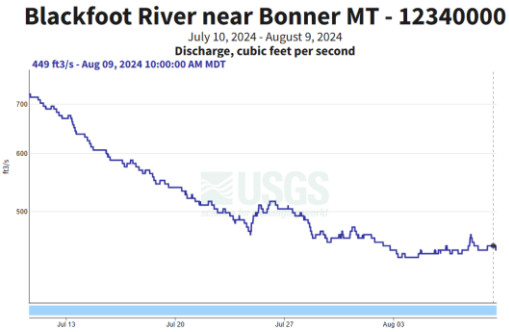
[3] **Longterm average** water use for each crop each week based on long-term historic data.

[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 VERY LOW & STILL FALLING

Blackfoot River flows continued a 30-day downward trend this week with a small bump upward from rain. Today the flow at Bonner is 443 CFS compared to an average of 875 CFS for this date. The highest flow on this date was 2,160 CFS in 1899 while the lowest was 379 CFS in 1988. Weather predictions for the next 30 days are for above average temperatures and rainfall so streamflows will continue well below average.

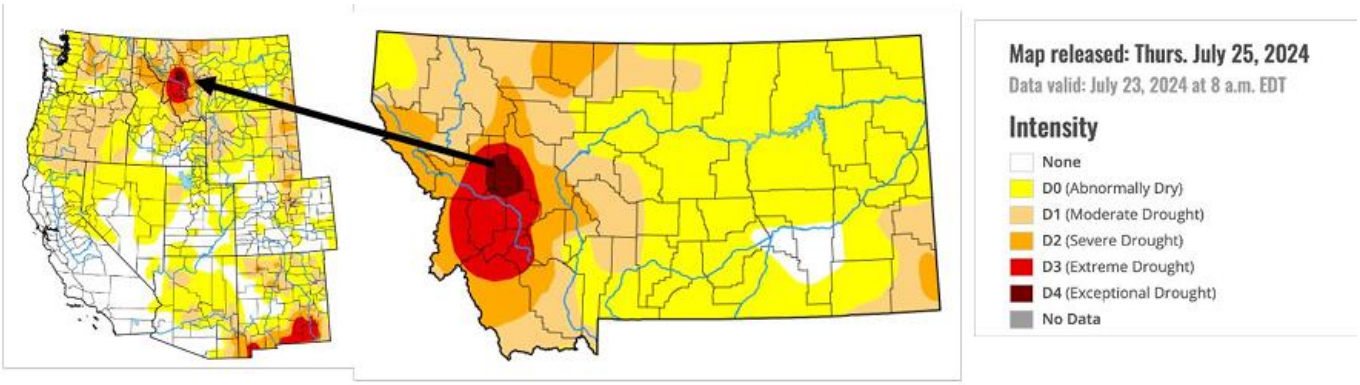


DROUGHT PLANS AND ACTION NOW IS STILL IMPORTANT

This week Blackfoot River flows at Bonner continue to be below the drought plan trigger level of 500 CFS. Contact Clancy Jandreau (Blackfoot Challenge water steward) for more information on drought plans, restrictions and options. **Irrigators have the greatest potential of all water users to help maintain streamflows.** The Challenge estimates that irrigators can have over a 50 CFS effect on Blackfoot River flows. Only a few CFS can have a tremendous effect on stream flows and temperatures. Some things irrigators can do to help are:

- Cease irrigation after first hay cutting (irrigating once after cutting if possible)
- Don't run all irrigation systems at once but rotate them to reduce the amount withdrawn
- Concentrate your irrigation during cooler weather and reduce or stop irrigation during the highest crop water use period (daytime, especially afternoon). Irrigate at night when possible.
- Reduce your irrigated acreage and do a good job irrigating on a smaller acreage
- Monitor irrigation system performance so you put on the right amount uniformly
- Apply more water during each application to ensure some reaches the soil and crop, check soil to ensure it's getting wet

The Blackfoot watershed remains the only place in the west that the U.S. Drought Monitor now lists as in ***EXCEPTIONAL DROUGHT (D4)***.



PLANNING FOR FUTURE DROUGHTS (OR THE NEW "NORMAL")

This year has reinforced the fact that drought is becoming more common and severe as well as lasting longer during the irrigation season.

Plant Crops That Use Less Water

Consider putting part of your acreage into crops that use less water to reduce your overall water need.

Local alfalfa and hay crops use the most water - 25 inches average (over 30 inches in hot years)

Pasture uses less water - 20 inches average (over 25 inches in hot years)

Small grains, peas and other annual crops use the least - 18 inches (over 20 in hot years)
These crops also have the advantage of maturing before low river flows trigger drought plans

Reduce Irrigated Acreage

You can produce a larger crop by irrigating a smaller area *well* than by irrigating a larger area *poorly*. If you reduce your acreage, you may also be able to reduce your costs for other inputs such as fertilizer, herbicides, seed, fuel and labor. This choice is tricky since it requires you to predict the future or take the word of weathermen.

Plant Hay and Pasture Mixes That Include Drought-Tolerant Species

The next time you renew a hayfield or pasture, consider including species that are more drought tolerant. Our favorite irrigated species have included meadow brome, orchardgrass and similar plants which give the best production if irrigated. However, many years have less water available and more drought restrictions. This trend is likely to continue.

Choose a **drought tolerant alfalfa**. Your seed supplier can help you pick an appropriate alfalfa that is more tolerant to drought and matches other conditions of soil, location and goals.

Include more **drought tolerant grasses** such as pubescent wheatgrass, intermediate wheatgrass, hard fescue, Altai wildrye and others. Your seed supplier can help pick out an appropriate mix.

Contact the Montana Extension Forage Specialist Hayes Goosey (406.994.5688) and have a personal conversation with one of the leading state experts. He is currently updating the extension publication on this subject (listed below) which I will pass on to you when they are available. I will also include more detailed information on drought-tolerant options in my annual report this October.

http://animalrange.montana.edu/documents/extension/EB0019.pdf

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.