BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday June 21, 2024

Last week had a little rain and very cool temperatures. Next week is predicted to be hot and sunny with no rain. Crops are growing well now with warmer conditions and good soil moisture and used about 1 inch of water this week. Streamflows continue to be 1/3 of average and are unlikely to improve this season. The Drought Committee is now meeting regularly, and **we have the potential to see some of the lowest flows on record** this year. Once again, we will provide weekly summaries of weather and crop water use along with predictions for the upcoming week. Please send us any ideas or questions on these or other subjects. We will respond and share them with everyone.

WEATHER – WARM AND SUNNY

It was just plain cold this last week with snow at the higher elevations. Most local croplands had about ¼ inch of rain this last week with a few lucky folks near Helmville getting over ¾ inch. Next week will be the first dominated by warm temperatures and sunny skies. Highs will be in the 80s and lows in the 40s. The 30-day and 90-day forecasts say **below average rainfall and above average temperatures.**

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

CROP WATER USE – LOW LAST WEEK, HIGH NEXT

Crop water use dipped below average last week with a little rain and very cool temperatures. Most crops used slightly more than **1 inch of water**. Next week crop water use will be higher due to little rain and much warmer temperatures. Despite a low snowpack, we have had some well-timed rains and cool temperatures which should result in good production this year, especially from the first cutting of hay crops.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL[1]	NEXT 7 DAYS DAILY AVE[2]	SEASON TOTAL[3]
HAY CROPS	**1.2**	**1.5**	.21	7.3
PASTURE	**1.1**	**1.3**	.19	6.8
SPRING GRAINS	**1.0**	**1.3**	.19	3.6
WINTER WHEAT	**1.3**	**1.6**	.23	8.2
LAWNS	**1.2**	**1.4**	.20	7.9

[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)

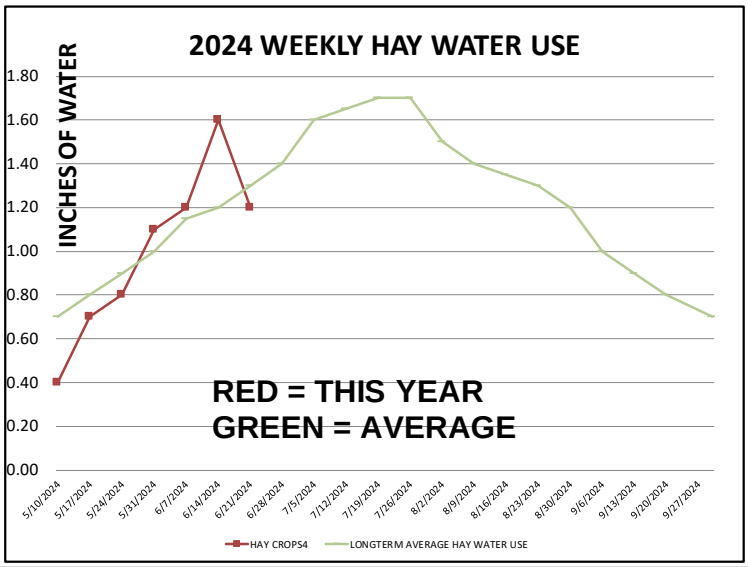
	RAIN[1]	2024 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE WEEKLY CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
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								1.40	2.00	1.00
7/5/2024								1.60	2.10	1.10
7/12/2024								1.65	2.20	1.10
7/19/2024								1.70	2.20	1.10
7/26/2024								1.70	2.20	1.10
8/2/2024								1.50	2.20	1.00
8/9/2024								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	2.46	7.25	6.75	3.60	2.90	8.15	7.85	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.

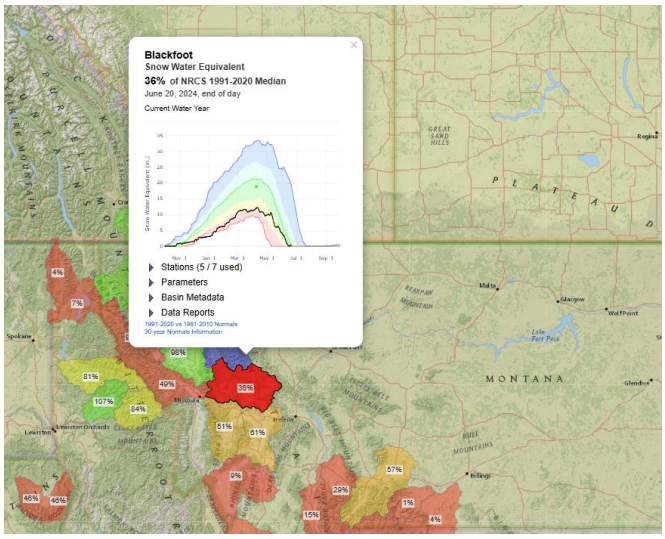


WILL YOUR NEXT PIVOT BE SOLAR POWERED?

I know everyone loves writing checks to power companies, but alternative is becoming reality across the globe. More companies and irrigation organizations are looking at solar power to reduce long-term costs for pumping water. In some cases, solar power panels are erected on nearby non-arable lands. In other cases, trials are underway where crops are grown around and even under solar panels. Covering canals and reservoirs with solar panels is being considered both to produce energy and reduce evaporation. In Montana, 30% of our water use goes to evaporation from reservoirs. It would be great to be able to make that water available for more productive uses.

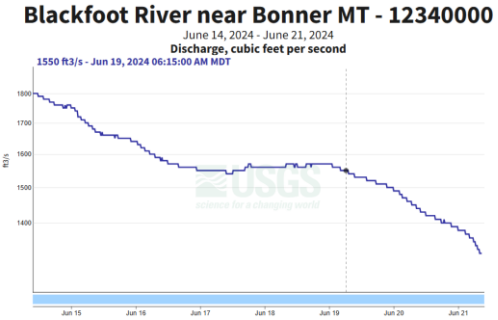
SNOWPACK AT HISTORIC LOW

The black line on the figure at right says it all – we are at the bottom of the barrel for snowpack in the Blackfoot watershed. The NRCS is reporting 34% of normal.



STREAMFLOW – TAKING A NOSEDIVE

Cool temperatures and a little rain slowed the downward trend of Blackfoot River flows for a few days this week. Flow at Bonner is now 1,320 CFS. This is only 30% of the average for this date (4,330 CFS). The highest flow on this date was 16,600 CFS in 1899 while the lowest flow was 946 CFS in 1977. Weather predictions for the next 30 days are for average temperatures and rainfall so streamflows are expected to remain well below average.



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.
- 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.