

BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday May 19, 2023



The watershed had a little rain this week with many croplands getting ¼ - ½ inch. Surface soils dried out since crops used more than it rained. Most crops used ½ - ¾ inch of water and most will use around 1 inch next week. The snowpack dropped from 97% of average last Friday to 62% of average today which is not good news for late season stream flows and irrigation. Streams are still flowing near bank full and have reached their peak unless we get a deluge. Once again, we will provide weekly summaries of weather and crop water use along with predictions for the upcoming week. Other topics will include streamflow, drought conditions, soil health, random irrigation highlights and anything else you want to talk about. Please send us your ideas or questions about these or other subjects. We will respond and share them with everyone.

WEATHER - WARM NEXT WEEK, LITTLE RAIN

Most cropland in the watershed had ¼ - ½ inch of rain this week although some had none! Temperatures will be warm (80s) over the weekend then in the 70s next week with lows in the 40s. There is a chance of rain all week but no major storms are predicted. The 30-day and 90 day forecasts say **average rainfall and above average temperatures.**



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

CROP WATER USE - HIGHER NEXT WEEK WITH WARMER WEATHER

Crop water use was lower than average this last week because crops only started growing recently due to the late start this season. Water use should bump up to about 1 inch next week for most crops. Note that in the early season things are more variable across Blackfoot croplands since low elevations and coarser soils warm up quicker. Therefore, in these early reports, we list a range of crop water use. 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	0.5-0.7	0.7-0.9	.10-.13	1.75
PASTURE	0.5-0.7	0.6-0.8	.09-.11	1.85
SPRING GRAINS	0.0-0.3	0.0-.04	.00-.005	0.5
WINTER WHEAT	0.6-0.8	0.8-1.0	.11-.14	2.2
LAWNS	0.6-0.8	0.8-1.0	.11-.14	2.0

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)

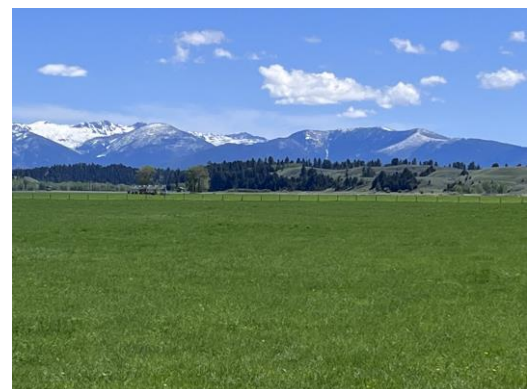
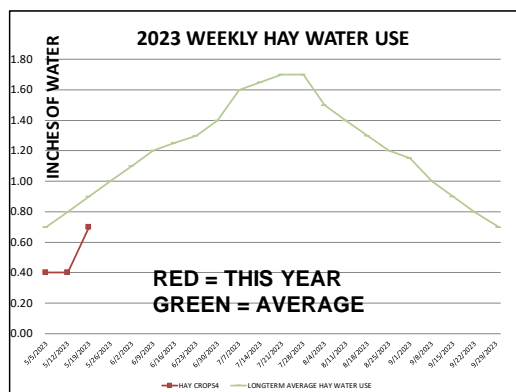
WEEK ENDING	RAIN ¹	2023 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/5/2023	0.10	0.40	0.40	0.00	0.00	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								1.00	1.30	0.70
6/2/2023								1.10	1.50	0.80
6/9/2023								1.20	1.70	0.80
6/16/2023								1.25	1.90	0.90
6/23/2023								1.30	2.00	1.00
6/30/2023								1.40	2.00	1.00
7/7/2023								1.60	2.10	1.10
7/14/2023								1.65	2.20	1.10
7/21/2023								1.70	2.20	1.10
7/28/2023								1.70	2.20	1.10
8/4/2023								1.50	2.20	1.00
8/11/2023								1.40	2.20	1.00
8/18/2023								1.30	2.00	0.90
8/25/2023								1.20	1.80	0.90
9/1/2023								1.15	1.60	0.70
9/8/2023								1.00	1.40	0.60
9/15/2023								0.90	1.40	0.50
9/22/2023								0.80	1.20	0.50
9/30/2023								0.70	1.00	0.40
TOTAL	1.85	1.75	1.85	0.50	0.00	2.15	1.95	26.25	37.20	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 d

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.



SOIL MOISTURE - SURFACE DRYING QUICKLY WITH GROWTH

Surface soils dried out this week as crops burst forth with warm temperatures. Most surface soils lost ½ - ¾ inch of moisture and will lose 1 inch next week. A little moisture was replaced with rainfall but not much. Subsoil moisture remains high throughout the watershed. The scattered showers predicted this week are unlikely to satisfy the expected crop water use so watch your soil moisture and irrigate when you get near 50% of your water holding capacity.



Soil near 100% of its water holding forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a dark stain or shiny surface.



Soil near 50% of its water holding capacity may form a weak ball but leaves little moisture on the hand. Soil at 25% or less of its water holding capacity does not form a ball when squeezed. It feels and looks dry. If sandy or loamy, it crumbles easily, if high in clay it forms a hard lump. Call, text or email anytime if you have questions about evaluating your soil moisture content and irrigation options.

WEEKLY TIPS

SNOWPACK AND WATER SUPPLY

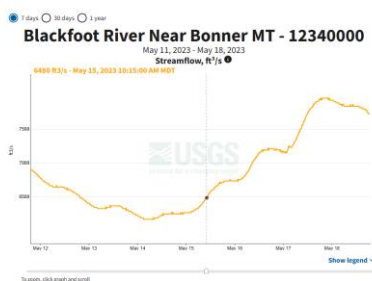
Our Blackfoot watershed snowpack dropped dramatically this week from 96% of average last Friday to only 61% today. Warm temperatures caused rapid melting and bank-full streams. Precipitation in the Blackfoot was 119% of normal over the last 30 days, mostly due to the deluge two weeks ago. Reservoir storage is still good at 97% of normal. Blackfoot river flows are still predicted to be slightly above average this season and hopefully some of that will come in late summer.



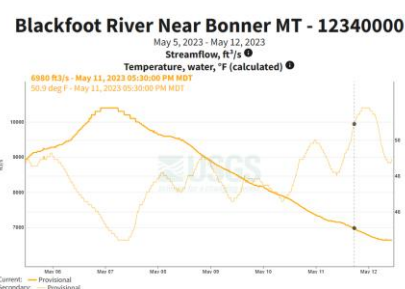
STREAMFLOW

The Blackfoot river flow at Bonner is about 7,730 CFS which is above average for this date (5,500 CFS) and above last year. The river peaked this year at about 10,400 CFS. 1997 set the highest flow record on this date at 15,800 CFS while the lowest flow on this date was 1250 CFS in 1941. The weekly chart for this week shows rising flows and a dip at the end, the opposite of last week when flows were falling. This is bad for flooding now and for late-season irrigation later.

THIS WEEK



LAST WEEK



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

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.