

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday May 27, 2022 (sent out Sunday May 29)



It was another week with cool temperatures and a bit of snow up high but little precipitation for local croplands. Soil moisture levels remain low in fields not yet irrigated, especially in the surface 2 feet. It's a great time to boost moisture levels while temps are cool, crop water use is low and water is abundant. Check how deep you are irrigating with a probe, shovel or moisture sensors to ensure you fully moisten the crop root zone. Lead your roots to deeper depths by irrigating deeply. Streams are flowing high so the remaining snowpack will not last long.

WEATHER - COOL AGAIN NEXT WEEK

Most Blackfoot croplands had only a trace of rain this week and cool temperatures. There will be some rain over the Memorial Day weekend (of course) but little the rest of the week. Skies will be partly cloudy to mostly sunny with high temperatures in the 60s and 70s with lows in the 40s. The 30-day forecast says above average rainfall and below average temperatures. The 90-day forecast says the opposite - below average rainfall and above average temperatures.



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

CROP WATER USE - ABOUT AVERAGE WITH COOL WEATHER

The season through May has seen little moisture and cool conditions on local croplands. Crop water use was again low this week but should come up to average with the warmer temperatures predicted for next week. Crop water use is starting to even out across the entire watershed as the higher elevations catch up to the lower areas.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	0.9	1.1	.16	4.3
PASTURE	0.8	1.0	.14	3.9
SPRING GRAINS	0.5-0.7	0.7-1.0	.10-.14	1.4
WINTER WHEAT	1.0	1.2	.17	3.7
LAWNS	0.9	1.2	.17	4.5

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 2022 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)										
WEEK ENDING	RAIN ¹	2022 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	1.25	1.00	1.00	0.00	0.00	1.00	1.00			
5/6/2022	0.25	0.70	0.60	0.10	0.00	0.80	0.80	0.70	1.00	0.40
5/13/2022	0.01	0.80	0.70	0.20	0.00	0.90	0.90	0.80	1.10	0.60
5/20/2022	0.10	0.90	0.80	0.40	0.20	1.00	0.90	0.90	1.20	0.70
5/27/2022	0.20	0.90	0.80	0.70	0.50	1.00	0.90	1.00	1.30	0.70
6/3/2022								1.10	1.50	0.80
6/10/2022								1.20	1.70	0.80
6/17/2022								1.25	1.90	0.90
6/24/2022								1.30	2.00	1.00
7/1/2022								1.40	2.00	1.00
7/8/2022								1.60	2.10	1.10
7/15/2022								1.65	2.20	1.10
7/22/2022								1.70	2.20	1.10
7/29/2022								1.70	2.00	1.10
8/5/2022								1.50	1.80	1.00
8/12/2022								1.40	1.70	1.00
8/19/2022								1.30	1.60	0.90
8/26/2022								1.20	1.40	0.90
9/2/2022								1.15	1.40	0.70
9/9/2022								1.00	1.30	0.60
9/16/2022								0.90	1.20	0.50
9/23/2022								0.80	1.10	0.50
9/30/2022								0.70	1.00	0.40
TOTAL	0.56	4.30	3.90	1.40	0.70	4.70	4.50	26.25	34.70	17.80

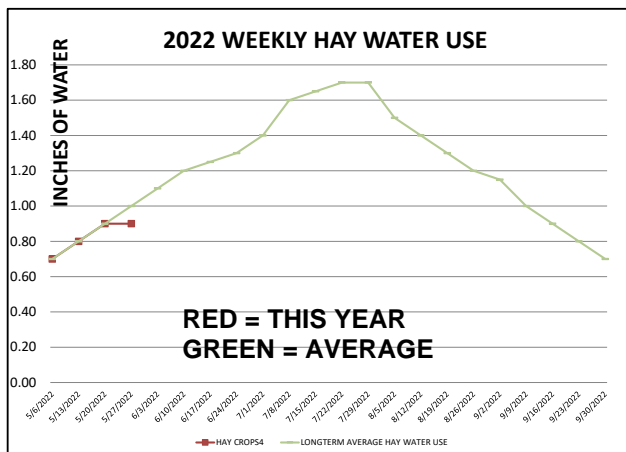
¹ Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April, May and Sept, 0.15-June and August, 0.2-July)

(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 drainage.

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 - CONTINUES TO RELY ON IRRIGATION

With little rainfall last week, soil moisture levels are being propped up by irrigation, especially in the surface layers. Continue to check your soil moisture and refill with at least as much as the weekly crop water use. This is also the easiest time to fill up soils to their full water holding capacities while crop water use is low, crops are short and weather is cool. Most soils could use an extra 3-4 inches to fill them up if you haven't irrigated this year and 1-2 if you are applying regularly.



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 (photo at left).



Soil near 50% of its water holding capacity may form a weak ball but leaves little moisture on the hand (photo at left).

Soil at 25% or less of its water holding capacity does not form a sturdy ball when squeezed. It feels and looks dry. If sandy or loamy, it crumbles easily, if high in clay it forms a hard lump (no photo). Call, text or email anytime if you have questions about evaluating your soil moisture content and irrigation options.

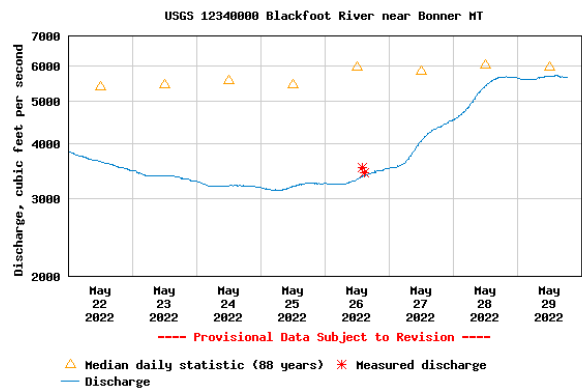
SNOWPACK AND WATER SUPPLY

Blackfoot watershed snowpack rose from 107% of average last week to **147%** due to more cool weather and a little snow up high. This sounds like there is still a lot of snowmelt to run off but remember this is just a comparison to average. This time of year is when most snowpack has gone and even 147% of average adds up to little snow. Precipitation in the last 30 days is slightly below average. Blackfoot river flows are still predicted to be about normal this season. We use NRCS figures which are updated daily and not those reported at the start of each month in those reports.



STREAMFLOW

The Blackfoot river flow at Bonner is about **5,600 CFS** which is below average (6,100 CFS). 1899 saw the highest flow at 13,200 CFS while the lowest flow was 1,060 CFS in 1941. Weather predictions for the next 30 days still call for below average temperatures and above average rainfall. Predictions for the next 90 days are for above average temperatures and below average and rainfall. Remember you can get the latest information anytime at: [USGS Current Conditions for USGS 12340000 Blackfoot River near Bonner MT](https://www.water.usgs.gov/monitoring/products/discharge/current/USGS_12340000_Blackfoot_River_near_Bonner_MT/)



SEWAGE SLUDGE PLUS NUCLEAR WASTE EQUALS CATTLE FEED

In the late 1970s, it was my first day as a soil scientist with the USDA Soil Conservation Service (now NRCS). I was shown to my desk and there was a copy of *Agricultural Research*, a monthly publication highlighting the USDA Research program. At lunch I picked it up and the first article that caught my attention had the title above. The linking of sewage sludge, nuclear waste and cattle feed made me immediately consider becoming a vegetarian. However, I suspected some future article would probably discuss sprinkling vegetables with the same “amendments”. It took me months to track down the researchers, background and related issues about this report. I was finally reassured that irradiated-sewage-sludge-eating-cattle were not going to appear at the grocery store ever.

In the modern world of Google, I could have found out the same information from my computer, tablet or phone instantly (none in the 1970s). As we have all eased into new tech, I encourage you to make the most of it. Never in history have we had so many answers at our fingertips. It has virtually eliminated those continuous exclamations of “I Bet You!” since most facts can be verified instantly. In my case, it took years of us old folks disagreeing on something then being politely educated about the facts by a young person in the room who was searching on a phone.

My message is to use these incredible resources: Google, YouTube, Google Earth and many others. A simple search on any question can open up a world of information. It’s great to see the different ways different folks around the world think about, let alone solve their daily issues. We can all learn and contribute together.



If you think your irrigation system is getting old - check out how this poor guy gets his water near Bratislava, Slovakia

For further information contact Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 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.