

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday July 30, 2021



Hot, dry, smoky weather continued this week on Blackfoot croplands. Next week will be hot over the weekend then drop almost 10 degrees, develop some clouds, a few thunderstorms and a little rain. Crop water use has been lowered slightly due to the cooling effect of smoke and held steady at about 1 ½ this week. Soil moisture dropped by that amount unless irrigated. Blackfoot River flows dropped to 820 CFS today and the 700 CFS drought response trigger will likely be reached this week. Water temperature should rise this week to the critical 71F level for fish. The Blackfoot Challenge Drought Committee is now meeting weekly and working with irrigators to help manage flows and temperatures.



WEATHER - HOT THEN COOLER WITH THUNDERSTORMS

It was hot this week but the smoke actually cooled things slightly. The weekend will be hot then thunderstorms will cool temps almost 10 degrees and could produce rain, lightning and wind increasing fire activity. Both the 30-day and 90-day forecasts continue to say **below average rainfall and above average temperatures**. Ovando is the green dot on this weeks smoke photo. See the latest satellite images at: [Satellite Imagery \(nwcg.gov\)](http://Satellite Imagery (nwcg.gov)) - click on the map area you want, choose the day on the calendar and click on the *Generate Subset* button

(too cloudy-click on a different calendar day). Another great smoke maps is: [Fire and Smoke Map \(airnow.gov\)](http://Fire and Smoke Map (airnow.gov)) where you can zoom in to see smoke and click on individual locations for real-time air quality information. The closest monitoring stations are Seeley Lake and Missoula.

CROP WATER USE - AVERAGE AT ¼ INCH PER DAY

This week crop water use continued at average levels with temperatures somewhat reduced by smoke. **Most crops used about 1 ½ inches of water and will use slightly less next week.** Remember that cutting reduces water use by 2/3 the first week and 1/3 the second week. The table below provides a quick summary of crop water use this last week and an estimate for next week. We also list season totals and compare them with past years in our annual reports available on the Challenge website.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.7	1.6	.23	16.9
PASTURE	1.4	1.3	.19	14.5
SPRING GRAINS	1.9	1.9	.27	15.6
WINTER WHEAT	0.5	0.2	.03	15.8
LAWNS	1.6	1.5	.21	16.8



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 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.

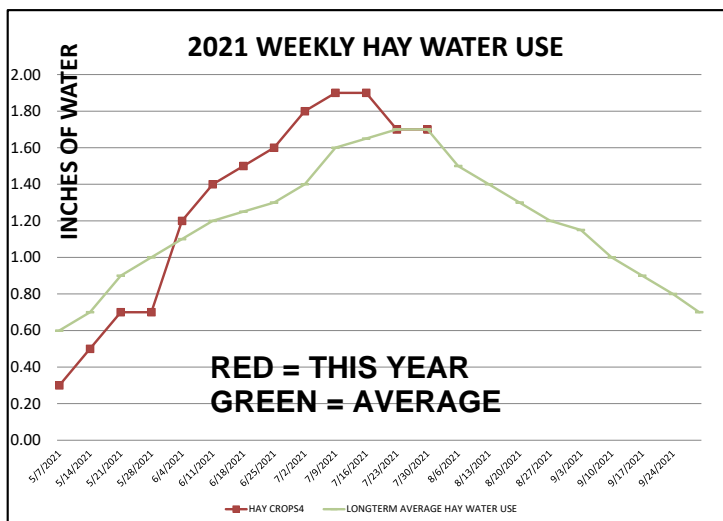
BLACKFOOT 2021 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)										
WEEK ENDING	RAIN ¹	2021 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/7/2021	0.40	0.30	0.40	0.00	0.00	0.50	0.50	0.60	1.00	0.30
5/14/2021	0.20	0.50	0.50	0.10	0.00	0.70	0.70	0.70	1.10	0.40
5/21/2021	0.50	0.70	0.60	0.30	0.10	0.80	0.80	0.90	1.20	0.50
5/28/2021	2.00	0.70	0.60	0.60	0.20	0.80	0.70	1.00	1.30	0.50
6/4/2021	0.10	1.20	1.00	0.90	0.60	1.30	1.20	1.10	1.50	0.60
6/11/2021	0.10	1.40	1.20	1.10	0.80	1.50	1.30	1.20	1.70	0.70
6/18/2021	0.20	1.50	1.30	1.40	1.10	1.60	1.40	1.25	1.90	0.70
6/25/2021	0.20	1.60	1.40	1.60	1.40	1.70	1.50	1.30	2.00	0.80
7/2/2021	0.10	1.80	1.50	1.90	1.70	1.90	1.70	1.40	2.00	0.90
7/9/2021	0.01	1.90	1.60	2.00	2.00	2.00	1.90	1.60	2.10	1.00
7/16/2021	0.01	1.90	1.60	2.00	2.00	1.50	1.90	1.65	2.20	1.00
7/23/2021	0.25	1.70	1.40	1.80	1.80	1.00	1.60	1.70	2.20	1.00
7/30/2021	0.01	1.70	1.40	1.90	1.90	0.50	1.60	1.70	2.00	1.00
8/6/2021								1.50	1.80	0.90
8/13/2021								1.40	1.70	0.80
8/20/2021								1.30	1.60	0.80
8/27/2021								1.20	1.40	0.70
9/3/2021								1.15	1.40	0.70
9/10/2021								1.00	1.30	0.60
9/17/2021								0.90	1.20	0.50
9/24/2021								0.80	1.10	0.50
9/30/2021								0.70	1.00	0.40
TOTAL	4.08	16.90	14.50	15.60	13.60	15.80	16.80	26.05	34.70	15.30

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.

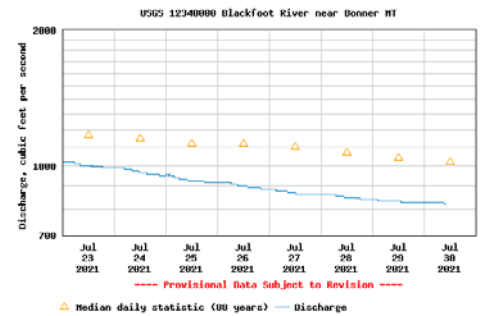
⁴ Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



WEEKLY TIPS

Blackfoot Stream Flow is 820 CFS at Bonner

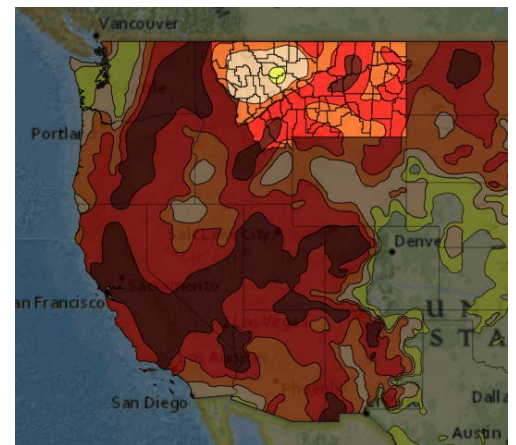
The Blackfoot rivers flow at Bonner fell to **820 CFS** this morning. Today's flow compares with an average of 1,060 CFS. The highest flow recorded on this date was 2,890 CFS in 1899 and the lowest flow was 398 CFS in 1988. Thunderstorms this week could boost stream flows temporarily but it's more likely flows will continue to drop. Water temperatures hit 70F at Bonner this week. The flow level should drop to 700 CFS this week triggering drought response plans.



Blackfoot Drought Response Plan

The purpose of the Blackfoot Drought Response Plan is to minimize the adverse impacts of drought on fisheries and to aid in the equitable distribution of water resources during low flow summers. Some highlights of the plan are presented below. The complete Drought Response Plan can be found at: [Blackfoot-Drought-Response-Plan_April2016Final.pdf](#) (blackfootchallenge.org)

Current Drought Map of Western US



The Blackfoot Drought Response Plan is based on the premise of “**shared sacrifice**” with the goal that all Blackfoot water users (agricultural, irrigators, outfitters, anglers, recreational users, government agencies, homeowners associations, businesses, conservation groups, and others) voluntarily agree to take actions that will result in water savings and/or the reduction of stress to fisheries resources during critical low flow periods. **Low flows and high temperatures this week will likely cause the Drought Committee to implement the plan.** Please start thinking about ways you can help by cutting back water withdrawals and considering fishing impacts.

Drought Information and Aid Sources

There are a number of USDA programs providing technical and financial assistance during drought and you can find the details at: [USDA Offers Disaster Assistance to Montana Farmers and Livestock Producers Impacted by Drought](#) (govdelivery.com) Most do not apply locally since our drought was not extreme.

- [Livestock Forage Disaster Program \(LFP\)](#) for 2021 grazing losses due to drought. LFP benefits may be available for grazing acres losses due to wildfires on federally managed lands on which a producer is prohibited, by a federal agency, from grazing normally permitted livestock.
- [Disaster Assistance Discovery Tool](#), [Disaster-at-a-Glance fact sheet](#), and [Farm Loan Discovery Tool](#) can help producers and landowners determine program or loan options. For assistance with a crop insurance claim, producers and landowners should contact their [crop insurance agent](#). For FSA and NRCS assistance, they should contact their local [USDA Service Center](#).
- [emergency haying and grazing of CRP acres](#) may be authorized (outside of the [primary nesting season](#)) to provide relief to livestock producers in areas affected by a severe drought or similar natural disaster

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 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 - IN DROUGHT CONSIDER REDUCING OR ENDING IRRIGATION

- Apply 1 - 2 inches of irrigation per week in August to hay and pasture crops for full production depending on weather and water availability.
- 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.