

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 23, 2022



With over 1 inch of rain at some spots this week and cooler temperatures, it finally felt more like a normal September. The smoke has gone for the season and next week will be warmer and sunny. Crop water use has dropped to average levels and soil moisture fell about 1 inch this week. Blackfoot streamflows continue to improve with recent rainfall. Most irrigators report average to higher-than-average production this year despite cooler early conditions and hotter later ones.

RAIN TURNING BACK TO SUNNY AND WARMER

Rain to end this week will turn back to sunshine for most of next week with temperatures warming throughout the week. Most of the watershed had a good rainstorm this week with over 1 inch in many places. Temperatures were cooler for a welcome change. Next week will be mostly sunny with high temperatures in the 70s and low 80s and lows in the 20s to 30s. The 30-day forecast says below average rainfall and above average temperatures. The 90-day forecast says above average rainfall and average temperatures.

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

CROP WATER USE: FINALLY AVERAGE FOR THIS TIME OF YEAR

Crop water use was about average this week at 1 inch for hay crops. It should be slightly lower next week as crops start slowing down with the approach of fall (see chart below).

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	0.8	0.7	.10	29.5
PASTURE	0.5	0.4	.06	24.2
SPRING GRAINS	0.0	0.0	.00	21.8
WINTER WHEAT	0.0	0.0	.00	15.3
LAWNS	0.7	0.6	.09	27.9

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

SOIL MOISTURE - STEADY WITH RECENT RAIN

Soil moisture stayed about the same this week in local hay and pasture crops since weekly crop water use about equaled what we had as rain. Soil moisture will drop slightly next week as the season winds down and we get some sunshine and moderate temperatures. Those who still have water available can effectively recharge soil moisture since crops are using less and lower temperatures mean more goes into the soil and less evaporates from crop and soil surfaces. However, please continue to be mindful of low streamflows and irrigate conservatively.

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.

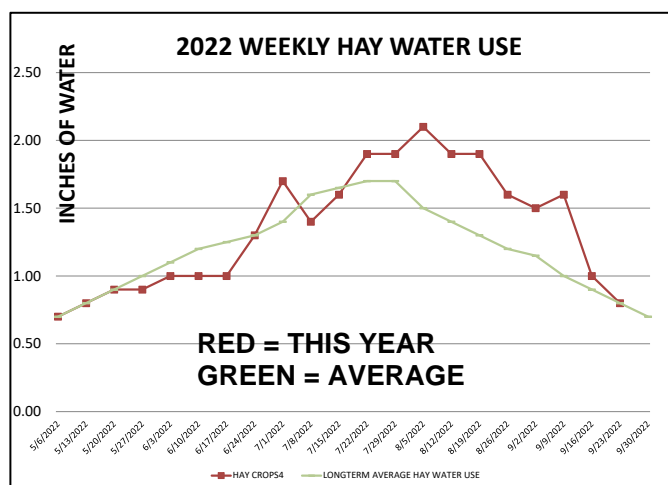
BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)										
WEEK ENDING	RAIN ¹	2022 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY 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	0.10	1.00	0.80	0.80	0.60	1.10	0.90	1.10	1.50	0.80
6/10/2022	0.50	1.00	0.80	0.90	0.70	1.10	0.90	1.20	1.70	0.80
6/17/2022	0.75	1.00	0.80	1.10	0.90	1.10	0.90	1.25	1.90	0.90
6/24/2022	1.00	1.30	1.10	1.30	1.20	1.30	1.20	1.30	2.00	1.00
7/1/2022	0.01	1.70	1.40	1.60	1.70	1.70	1.60	1.40	2.00	1.00
7/8/2022	0.75	1.40	1.20	1.60	1.60	1.50	1.30	1.60	2.10	1.10
7/15/2022	0.01	1.60	1.30	1.70	1.70	1.30	1.50	1.65	2.20	1.10
7/22/2022	0.01	1.90	1.60	2.10	2.10	1.00	1.80	1.70	2.20	1.10
7/29/2022	0.01	1.90	1.60	2.20	2.20	0.50	1.80	1.70	2.20	1.10
8/5/2022	0.01	2.10	1.70	2.40	2.40	0.00	2.00	1.50	2.20	1.00
8/12/2022	0.01	1.90	1.60	1.90	2.00	0.00	1.80	1.40	2.20	1.00
8/19/2022	0.01	1.90	1.50	1.50	1.80	0.00	1.80	1.30	2.00	0.90
8/26/2022	0.25	1.60	1.30	0.80	1.20	0.00	1.60	1.20	1.80	0.90
9/2/2022	0.10	1.50	1.10	0.20	0.80	0.00	1.30	1.15	1.60	0.70
9/9/2022	0.01	1.60	1.20	0.00	0.20	0.00	1.40	1.00	1.40	0.60
9/16/2022	0.20	1.00	0.80	0.00	0.00	0.00	0.90	0.90	1.40	0.50
9/23/2022	1.00	0.80	0.50	0.00	0.00	0.00	0.70	0.80	1.20	0.50
9/30/2022								0.70	1.00	0.40
TOTAL	5.29	29.50	24.20	21.50	21.80	15.30	27.90	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 drainage.

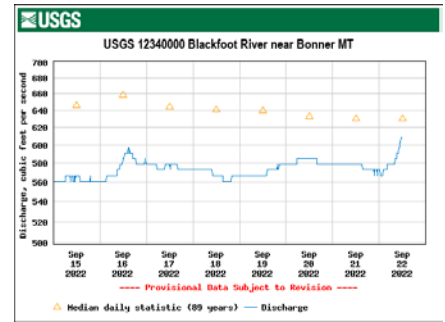
³ **Longterm average** water use for each crop each week based on long-term historic data.

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



RIVER FLOWS COME UP WITH RAINFALL

The Blackfoot river flow at Bonner is coming up finally due to rainfall this week and should continue that trend. Today flow is **609 CFS** (average for this date is 647 CFS). 1965 saw the highest flow at 1,240 CFS while the lowest flow was 365 CFS in 1905. Thanks to everyone who implemented their drought plans. Your efforts have really helped in recent weeks!

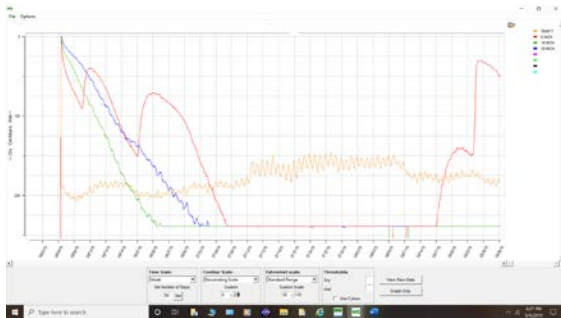


BE FLEXIBLE, NEXT YEAR WILL BE TOTALLY DIFFERENT

If you think you discovered the perfect formula for irrigation or most other issues around the place, rest assured that it will be totally different next year. Last year was the drought. The year before, it snowed into June. Whatever you choose to plan for, plan to be flexible and adapt to an ever changing and more challenging world. We will continue to try and keep you informed of the latest conditions, especially the start of our every changing growing season and the need for early irrigation.

DO YOU WANT TO LEARN HOW TO USE SOIL MOISTURE SENSORS?

Soil Moisture Sensors determine soil moisture content instantly and document changes over time. Sensors placed in the upper root zone show the immediate boost in moisture with irrigation and the decline as crops use water. Deeper sensors reveal when irrigation has penetrated the entire root zone and filled up the soil to its full water holding capacity. This program assists with equipment costs, installation and proper calibration of sensors as well as training in how to interpret and use results.



Let us know if you might be interested. Our goal is to provide irrigators with a permanent useful option for soil moisture monitoring that doesn't require a shovel and could be upgraded as cell service improves. Eventually you will have sensors connected to your irrigation system and it will irrigate by itself. Contact Clancy or Barry if you are interested in installing sensors.

Seasonal Soil Moisture and Temperature Chart

TELL US WHAT YOU THINK!

I'll be writing up my annual report in the next week and would like to hear what you think about irrigation, this weekly report, other things we should be talking about or other ways to do it.

What I will talk about includes:

- A summary of weather and crop water use for another dry year
- The drought response plan and how its working
- Soil health options for improving irrigation, and world peace
- A summary of this year compared over the short and long terms

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- BE DROUGHT AWARE, REDUCE IRRIGATION DURING DROUGHT

- 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 to help streamflows.



SEPTEMBER – APPLY AS NEEDED & AVAILABLE & PREP FOR WINTER!

- Apply ½ - 1 ½ inches of irrigation per week in September to hay and pasture crops for full production depending on weather. Continue to implement your drought plan to help low streamflows. Irrigate new plantings as needed. Prepare the system for winter and an early start next spring.