

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 4, 2020



Our eight rainless weeks will – Of Course – end during your Labor Day Picnic or Campout. A rainy Labor Day will be followed by clear skies and frost all week with wild temperature swings from the 30s to 80s. Crop water use continues about 1¼ inches for most crops and should decrease next week. Blackfoot River flows dropped to 621 CFS today which is slightly below average for the first time in months. Cooler temperatures and frost will change routines but local crops are still looking exceptional.

We provide weekly summaries of weather, crop water use and soil moisture conditions as well as tips for irrigation, soil health and crop production. A condensed overview of suggestions for the entire irrigation season is presented on the last page of this report. Use it to look ahead and plan or to compare what you're doing now. If you would like other information please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).



WEATHER - HAZE VARIES AND FROST RETURNS

Most of the drainage again had a trace of rain or less this week with the haze leaving and returning in patches. Eight rainless weeks and hot temperatures will end on Labor Day with cooler temperatures and rain likely. The coming week is a wild roller coaster with **highs in the 50s to 80s** and **lows in the 20s to 40s**. The 30-day forecast says above average temperatures and below average rainfall. The 90-day forecast predicts above average temperatures and rainfall.

CROP WATER USE - DROPPING WITH COOLER WEATHER

Crops used as much as ¼ inch of water on hot windy days this week and almost no water on cool days. Water use continues higher than average for this time of year but will decrease next week due to lower temperatures and frost. The result of our extended season has been exceptional crop growth for the second year in a row. The table below provides a quick summary of crop water use this last week and an estimate for next week. The table and chart on Page 2 summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.4	1.3 (1.0 - 1.4)	.19	23.6
PASTURE	1.1	1.0 (0.8 - 1.1)	.16	19.6
SPRING GRAINS	0.0	0.0 (0.0 - 0.0)	.00	16.7
WINTER WHEAT	0.0	0.0 (0.0 - 0.0)	.00	15.9
LAWNS	1.3	1.2 (0.9 - 1.3)	.17	22.1

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

BLACKFOOT 2020 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

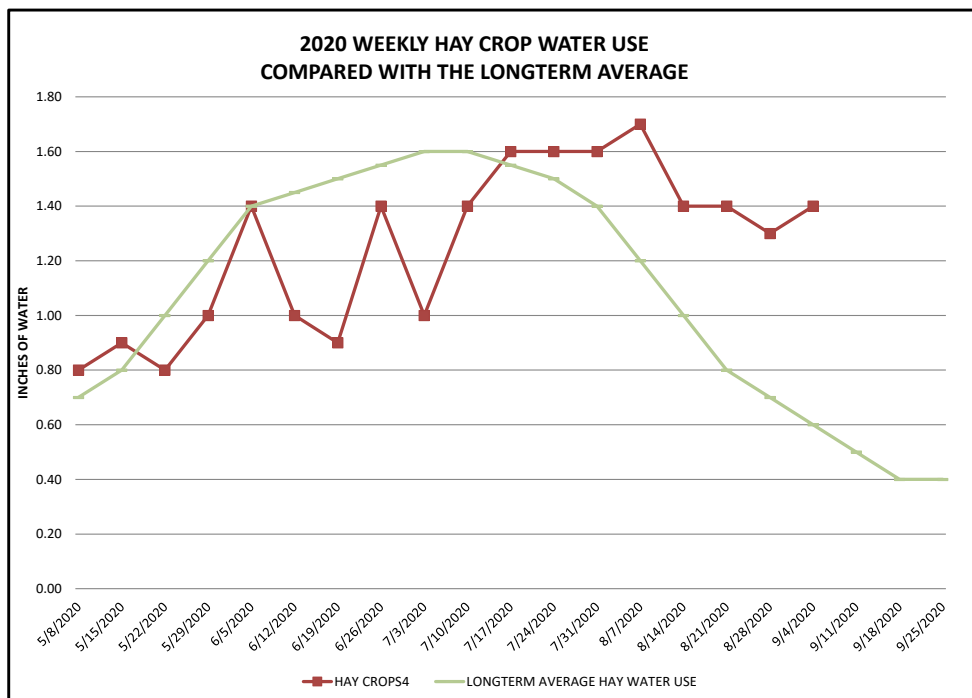
WEEK ENDING	RAIN ¹	2020 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/8/2020	0.01	0.80	0.70	0.10	0.10	0.90	0.90	0.70	1.00	0.30
5/15/2020	0.30	0.90	0.80	0.10	0.10	0.90	0.90	0.80	1.10	0.50
5/22/2020	1.25	0.80	0.70	0.30	0.20	0.80	0.80	1.00	1.20	0.60
5/29/2020	0.10	1.00	0.80	0.70	0.40	1.20	0.90	1.20	1.30	0.80
6/5/2020	1.00	1.40	1.20	1.00	0.70	1.50	1.30	1.40	1.50	1.00
6/12/2020	1.00	1.00	0.90	1.00	0.90	1.10	1.00	1.45	1.70	1.00
6/19/2020	0.25	0.90	0.70	0.90	0.90	1.00	0.80	1.50	1.90	1.10
6/26/2020	0.25	1.40	1.20	1.70	1.70	1.70	1.30	1.55	2.00	1.10
7/3/2020	1.00	1.00	0.80	1.20	1.20	1.20	0.90	1.60	2.10	1.30
7/10/2020	0.01	1.40	1.10	1.50	1.50	1.40	1.20	1.60	2.00	1.20
7/17/2020	0.01	1.60	1.30	1.80	1.80	1.20	1.50	1.55	2.00	1.20
7/24/2020	0.01	1.60	1.30	1.80	1.80	0.80	1.50	1.50	2.20	1.10
7/31/2020	0.01	1.60	1.30	1.80	1.80	0.80	1.50	1.40	2.20	1.10
8/7/2020	0.01	1.70	1.40	1.20	2.00	0.25	1.60	1.20	1.50	0.90
8/14/2020	0.01	1.40	1.20	0.50	1.00	0.00	1.30	1.00	1.30	0.70
8/21/2020	0.01	1.40	1.10	0.00	0.50	0.00	1.20	0.80	1.20	0.60
8/28/2020	0.01	1.30	1.00	0.00	0.00	0.00	1.20	0.70	1.10	0.50
9/4/2020	0.01	1.40	1.10	0.00	0.00	0.00	1.30	0.60	1.00	0.40
9/11/2020								0.50	0.90	0.40
9/18/2020								0.40	0.70	0.30
9/25/2020								0.40	0.70	0.30
TOTAL	6.50	23.60	19.60	15.70	16.70	15.85	22.10	22.85	30.60	16.40

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 - DROPS 1 to 1 1/4 INCHES IF IRRIGATED

Where there was soil moisture it dropped by 1 to 1 ¼ inches this week depending on crop type and whether you just cut or not. Crop water use decreases with cutting by 2/3 the first week and 1/3 the second week before returning to the crop's full potential in the third week after cutting.

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 shiny surface. Bouncing the soil in the hand usually brings water to the surface. Soil near 75% of its water holding capacity also forms a ball and leaves the hand moist but no actual water is visible on the hand or soil.

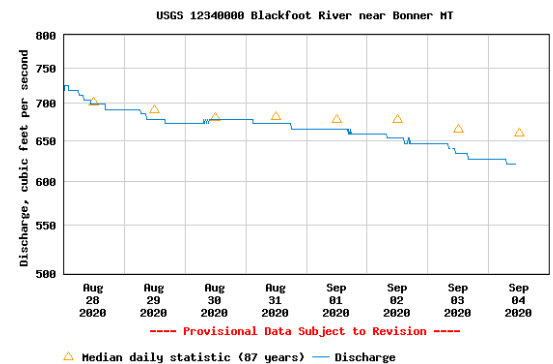


WEEKLY TIPS

Blackfoot River Flow is Slightly Below Average



TODAY:	621 CFS
AVERAGE:	678
HIGHEST:	1,460 (1899)
LOWEST:	324 (1988)



After 8 weeks with only a trace of rainfall throughout the drainage the Blackfoot River flow has finally dropped to slightly below average. Labor Day rain predictions are bad for sunbathers but good for streamflows.

Your Winter Reading List

Entertaining: **Cadillac Desert** by Marc Reisner remains the most entertaining history of water development in the west. There are also related documentaries the web sites including YouTube. The Movie "Chinatown " was partially based on these events.

Educational: **The Nature and Properties of Soils** by Weil and Brady has been the bible of soil science for decades and is used by Introductory Soils Classes across the country. If you have a serious interest in soils and the time to invest, you can't find a better foundation for your soil knowledge.

Fascinating: **Conquest of the Land Through 7000 Years** by C. Lowdermilk tells the tale of how civilizations have risen and fallen on the productivity of the land and on irrigated agriculture. Dr. Lowdermilk documented how soil erosion had destroyed most civilizations and archeologists are always digging up old civilizations because bad land management eroded the landscape down upon them. There are entire books on this subject including *Topsoil and Civilization* but Lowdermilk's shorter account is a more digestible start.

<https://rewilding.org/wp-content/uploads/2012/05/Conquest-of-the-Land-through-7000-Years.pdf>

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- REDUCE OR CEASE IRRIGATING IF POSSIBLE DURING DROUGHTS!

- Apply 1 - 2 ½ 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.