BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday August 14, 2020

It remained dry for the 5th week in a row but slightly cooler. Next week will be sunny again with warmer temperatures returning. Crop water use slowed last week to under 1½ inches for most crops but will increase next week with slightly warmer temperatures. Soil moisture now drops each week by the amount crops use unless irrigated. Blackfoot River flows were below 1000 CFS this week (814) but fishing and irrigation restrictions seem less likely this year (see page 3 for more information). Congratulations - local crops are looking exceptional for the second year in a row due to good initial soil moisture and an extended period of rainy weather followed by hot, dry weather for harvest!

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 – SUNNY AND WARMER

Little or no rain fell on Blackfoot croplands this week but temperatures were cooler. Next week looks dry again but warmer. High temperatures will reach into the 90s with lows in the 40s and 50s. The 30-day forecast says above average temperatures and below average rainfall. The 90-day forecast says above average temperatures and rainfall.

CROP WATER USE – DROPS AS GRAINS MATURE AND TEMPS COOL

Crop water use dropped this week due to cooler temperatures. Maturing grains also reduced water use. Most crops used less than 1½ inches but this will increase next week due to higher temperatures. Crop water use remains above average for this time of year as we experience an extended season due to cool, rainy weather earlier this summer. The result 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 TOTAL[1]	NEXT 7 DAYS DAILY AVE[2]	SEASON TOTAL[3]
HAY CROPS	**1.4**	**1.6** (1.4 - 1.7)	.23	19.5
PASTURE	**1.2**	**1.4** (1.2 - 1.5)	.20	16.4
SPRING GRAINS	**1.5**	**1.2** (0.8 - 1.0)	.17	17.2
WINTER WHEAT	**0.0**	**0.0** (0.0 - 0.0)	.00	15.9
LAWNS	**1.3**	**1.5** (1.3 - 1.6)	.21	18.4

[1]Expected water use over the next week (range if weather becomes cooler or hotter than expected)
[2]Expected average daily water use over the next week (compare this with your soil moisture content)
[3]Beginning 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)

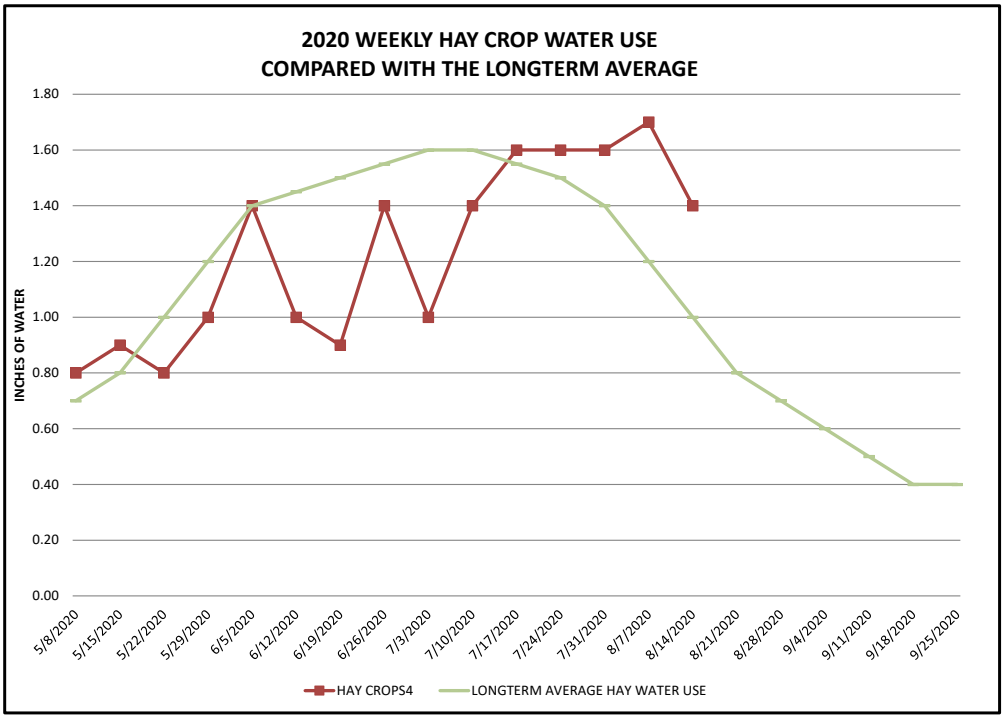
	RAIN[1]	2020 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE WEEKLY CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/8/2020	0.01	0.80	0.70	0.10	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	2.00	2.00	0.25	1.60	1.20	1.50	0.90
8/14/2020	0.01	1.40	1.20	1.20	1.50	0.00	1.30	1.00	1.30	0.70
8/21/2020								0.80	1.20	0.60
8/28/2020								0.70	1.10	0.50
9/4/2020								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	**6.47**	**19.50**	**16.40**	**17.20**	**16.70**	**15.85**	**18.40**	**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 LESS THAN 1½ INCHES

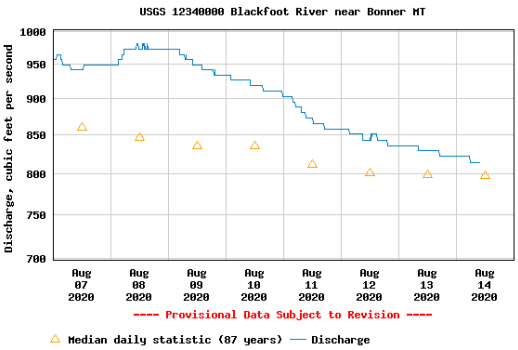
Where there was soil moisture it dropped by less than 1½ inches this week depending on crop type and whether you just cut or not. It will continue to decrease next week at a slightly faster rate due to warmer temperatures. Crop water use decreases with cutting by 2/3 the first week and 1/3 the second week before returning to the crop's full potential in the third week after cutting. **Cutting during these high use periods (hot and dry) saves soil moisture.**

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 About Normal

TODAY:	**814 CFS**
AVERAGE:	**810**
HIGHEST:	**1,880 (1899)**
LOWEST:	**378 (1988)**



Blackfoot River flows have dropped to average levels for this time of year. Weather predictions for the remainder of the irrigation season suggest a continual decrease in flow but not enough to trigger drought restrictions.

2020 Drought Concerns and Fishing/Irrigation Restrictions

On August 3, the Blackfoot River flow dropped below 1,000 CFS at the Bonner measuring gage. Recently, river temperatures topped 71 degrees F for a day or two -- which can also be a trigger point for fishing restrictions.

This is the point where we give anglers and water users a heads up that the **Drought Response Plan** may be enacted if the river drops below 700 CFS or water temps rise for a sustained period. However, because flows are still above average at this point, drought response action is unlikely this year. Watch our website and this weekly irrigation report for drought response updates or contact Water Steward Jennifer Schoonen (jennifer@blackfootchallenge.org) with questions.

TEN YEARS AGO THIS WEEK:

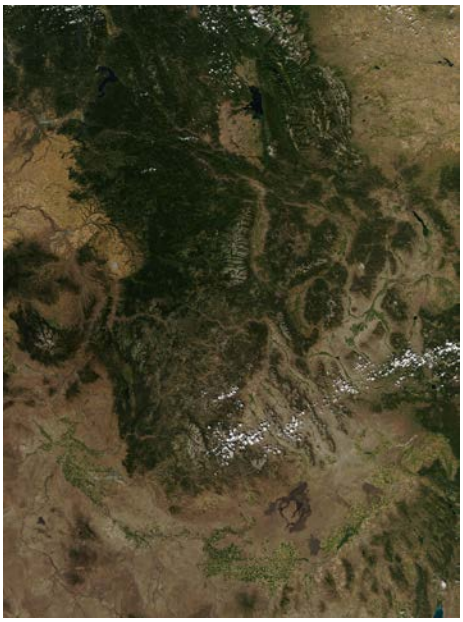
We were talking about drought conditions and the potential for fishing and irrigation restrictions to start soon.

FIVE YEARS AGO THIS WEEK:

We were announcing drought restrictions which triggered drought response plans and fishing restrictions. Blackfoot river flows were below 460 CFS, well below the 700 CFS trigger level (and well below the 814 CFS we have today).

A Google search for “drought” yielded 53,000,000 hits five years ago. The same search yields twice that many hits today reflecting both a warming climate and greater concern for water management worldwide.

Five years ago, we were in one of the worst fire seasons ever. The satellite photo on the left shows the northern Rocky Mountains covered by smoke (Ovando is the black dot). The same photo from this week shows almost no fire activity at all. Zoom in to see your place.



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 likely be totally different next year. The last two years have seen abundant soil moisture at the start of the season and lots of rain throughout the early summer. Prior to that we had years of drought conditions throughout most of the season. Whatever your plans, try to stay flexible and be ready to adapt to an ever changing and more challenging world. We will continue to try and keep you informed of the latest conditions and the need for early irrigation especially at the start of each growing season. Stay safe, stay alert and stay flexible.

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.