

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Sunday September 8, 2019



OK, I delayed sending out Fridays report for a couple days in order to report [good news](#) about rainfall and river flows. A little rain early last week left ¼ inch across local croplands but Friday and Sunday gave us ½ to 1 inch. Blackfoot River flows responded to rain and should continue upwards. Next week begins with significant rainfall then showers through most of the week and much cooler temperatures. Crop water use remained above-average this week at about 1 inch for most crops and will drop with cooler wet weather.

Blackfoot River flows at Bonner are finally on the upswing and should rise above 700 CFS in the next few days.

These reports, provide weekly summaries of weather, crop water use and soil moisture conditions plus tips for irrigation, soil health and crops. Hints for the entire irrigation season are on the last page. For other irrigation information please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).

WEATHER - RAIN, SHOWERS, COOL AND THEN SUN LATE IN THE WEEK



Most croplands throughout the drainage had about ¼ inch of rain last week then on Friday and Sunday they had ½ to 1 inch. The rest of the week will continue wet and cool until Thursday and Friday. The 30-day prediction is for above average temperatures and rainfall while the 90-day prediction predict is above average temperatures and average rainfall. We appear to have passed the wildfire smoke period successfully.

CROP WATER USE - STILL ABOVE AVERAGE BUT DROPPING NEXT WEEK

Crop water use continued above average this week with hay crops, pasture and lawns using about 1 inch. Most annual crops including small grains have been harvested and water use has ended. Crop water use will decline this coming week with cool wet weather conditions. The table below provides a quick summary of crop water use last week and an estimate for next week. The table and chart on Page 2 summarize the entire irrigation season.



WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.1	0.8 (0.7 - 1.0)	.11	23.8
PASTURE	0.9	0.6 (0.5 - 0.8)	.09	20.1
SPRING GRAINS	0.0	0.0 (0.0 - 0.0)	.00	17.0
WINTER WHEAT	0.0	0.0 (0.0 - 0.0)	.00	16.5
LAWNS	1.0	0.7 (0.6 - 0.9)	.10	22.6

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

BLACKFOOT 2019 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

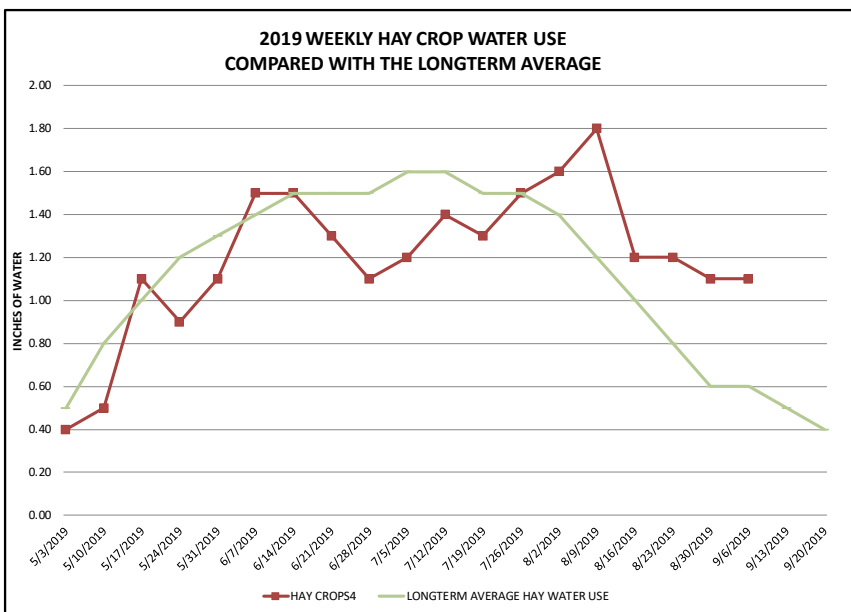
WEEK ENDING	RAIN ¹	2019 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/3/2019	0.30	0.40	0.50	0.10	0.10	0.40	0.50	0.50	0.80	0.30
5/10/2019	0.30	0.50	0.40	0.10	0.10	0.50	0.50	0.80	1.00	0.50
5/17/2019	0.40	1.10	0.90	0.10	0.10	1.10	1.00	1.00	1.10	0.60
5/24/2019	0.10	0.90	0.80	0.20	0.10	1.00	0.90	1.20	1.30	0.80
5/31/2019	0.75	1.10	0.90	0.50	0.20	1.20	1.00	1.30	1.40	0.90
6/7/2019	0.30	1.50	1.30	1.00	0.60	1.60	1.40	1.40	1.50	1.00
6/14/2019	0.50	1.50	1.40	1.50	1.10	1.70	1.50	1.50	1.70	1.00
6/21/2019	0.10	1.30	1.10	1.40	1.20	1.50	1.20	1.50	1.90	1.10
6/28/2019	0.10	1.10	0.90	1.20	1.10	1.20	1.00	1.50	2.00	1.10
7/5/2019	0.40	1.20	1.00	1.30	1.20	1.30	1.10	1.60	2.10	1.30
7/12/2019	0.25	1.40	1.10	1.50	1.50	1.50	1.30	1.60	2.00	1.20
7/19/2019	0.50	1.30	1.00	1.40	1.40	1.00	1.20	1.50	2.00	1.20
7/26/2019	0.01	1.50	1.20	1.70	1.70	0.75	1.40	1.50	2.20	1.10
8/2/2019	0.01	1.60	1.30	1.80	1.80	0.50	1.50	1.40	1.70	1.00
8/9/2019	0.10	1.80	1.40	1.50	2.00	0.10	1.70	1.20	1.50	0.90
8/16/2019	0.40	1.20	0.90	1.00	1.25	0.00	1.10	1.00	1.30	0.70
8/23/2019	0.20	1.20	1.00	0.50	0.50	0.00	1.10	0.80	1.00	0.50
8/30/2019	0.20	1.10	0.90	0.10	0.10	0.00	1.00	0.60	0.80	0.40
9/6/2019	0.20	1.10	0.90	0.00	0.00	0.00	1.00	0.60	0.70	0.30
9/13/2019								0.50	0.70	0.30
9/20/2019								0.40	0.60	0.20
9/30/2019								0.40	0.60	0.20
TOTAL	6.62	23.80	20.10	17.00	16.15	16.45	22.60	24.80	31.40	17.10

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)

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.

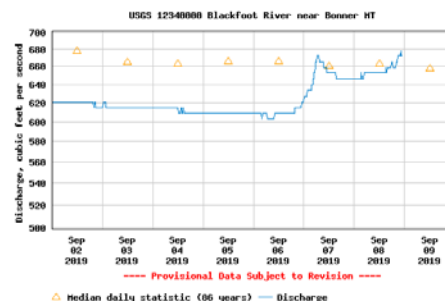
³ **Longterm average** water use for each crop each week based on long-term historic data.

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



STREAMFLOWS - COMING UP FINALLY!

Blackfoot river flows at Bonner responded quickly to rainfall on Friday and Sunday increasing to slightly above average for this date. With more rain predicted we should rise above the critical 700 CFS level in the next few days. Today's flow is at 672 CFS compared with an average for this date of 661 CFS. The Highest flow on this date was 1,340 (1899) and the lowest was 333 CFS (1988).



EDUCATION OPPORTUNITIES: NEW TRICKS FOR THE OLD AND YOUNG

2020 MONTANA SOIL HEALTH SYMPOSIUM

Billings is the site for the 2020 Montana Soil Health Symposium with some of the regions most respected experts from both the farm and universities. February 4th and 5th are the dates with more information at: <http://mtsoilhealth.org/>

SOIL HEALTH ACADEMY

This is one of several organizations that sponsor workshops across the country on soil health and grazing related subjects. The Soil Health Academy works across a wide range of environments from Missouri to New Mexico. Info at: <https://soilhealthacademy.org/upcoming-schools>

WESTERN MONTANA GRAZING AND AGRICULTURE CONFERENCE for 2020?

I haven't heard about a 2020 *Western Montana Grazing and Agriculture Conference* but hopefully this is now an annual event and the best local source of great information that you can use now. The 2019 event coordinated by the Lake County Conservation District and NRCS was an excellent chance to hear about the latest in grazing options, soil health, cover crops and more. Coffee-break wisdom and old friends were also plentiful. I will keep you posted as soon as I hear more.

Rapeseed



Sunflower



Safflower



Ryegrass



Peas



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. Some years you better start up now.



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 drainage, especially in drought years.
- Reduce river withdrawals by rotating systems and reducing the amount of irrigation at one time.



SEPTEMBER – APPLY AS NEEDED/AVAILABLE & GET READY FOR SPRING!

- Stop irrigating if you can during drought periods
- 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.