

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 28, 2018



Congratulations! You made it through another irrigation season. Hopefully one of the best. Last week had a mix of clouds and sun with a trace of rain across Blackfoot croplands. Next week looks like a little rain over the weekend then cloudy with temperatures again in the high 60s. Streamflows fluctuated little last week and remain slightly above average. Crop water use will drop below to about ½ inch next week for mature crops as temperatures cool and plants slow growth. What happened to that snowstorm we always used to get in September?

General irrigation suggestions for the entire season are presented on the last page of this report. Use these to look ahead and plan or to compare with what you're doing now. If you have questions or comment please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).



WEATHER - WEEKEND RAIN THEN CLOUDY

This week had some great sunny days and a trace of rain. Next week looks like a little rain over the weekend then cloudy skies with the upper 50s.



CROP WATER USE - STILL ABOVE AVERAGE

Crop water use below 1 inch last week and should be closer to ½ inch next week. And no, if you are still irrigating water use does not drop to zero on September 30 just because I don't send out any more reports but should be very low. The table and chart on Page 2 summarize the entire irrigation season. This year started out with low crop water use then climbed above average with hot weather in July and August (100F+). It has remained above average throughout September.



WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	0.8	0.7 (0.8 – 1.1)	25.2
PASTURE	0.6	0.5 (0.7 – 0.9)	18.5
SPRING GRAINS	0.2	0.1 (0.1 – 0.3)	18.4
WINTER WHEAT	0.1	0.1 (0.0 – 0.1)	15.9
LAWNS	0.7	0.6 (0.8 – 1.1)	23.7
RAIN (Average across drainage croplands)	T	T	7.1
EFFECTIVE RAIN	0	0	5.1

¹Expected water use (range if weather becomes cooler or hotter than expected)

²Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since then we include April

BLACKFOOT 2018 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

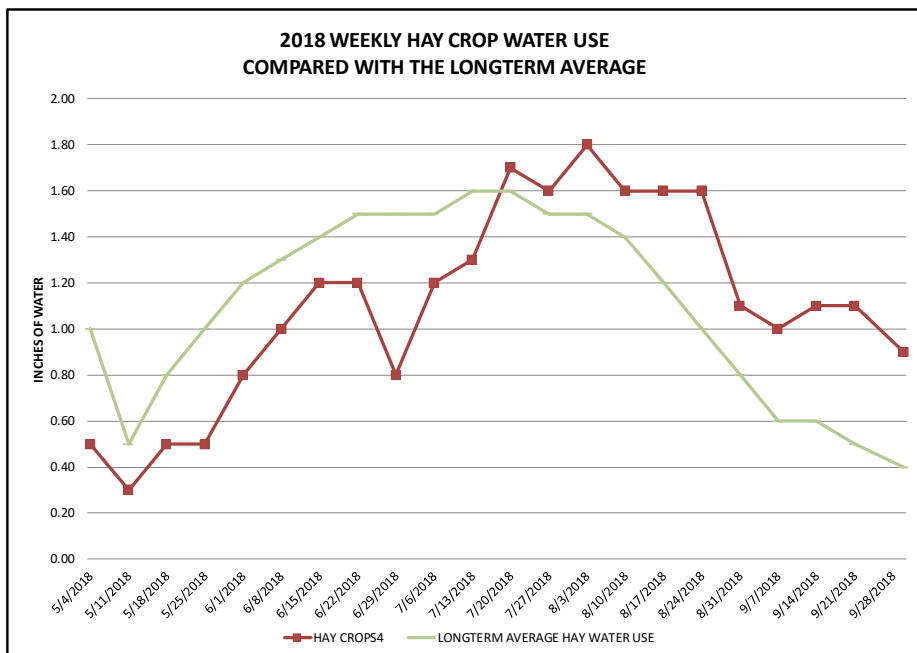
WEEK ENDING	RAIN ¹	2018 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.50	0.50	0.40	0.10	0.10	0.50	0.50	1.00	1.50	0.50
5/4/2018	0.50	0.30	0.20	0.10	0.10	0.30	0.30	0.50	0.80	0.30
5/11/2018	0.50	0.50	0.40	0.10	0.10	0.50	0.50	0.80	1.00	0.50
5/18/2018	0.50	0.50	0.40	0.10	0.10	0.50	0.50	1.00	1.10	0.60
5/25/2018	0.25	0.80	0.70	0.30	0.10	0.80	0.80	1.20	1.30	0.80
6/1/2018	0.75	1.00	0.90	0.50	0.30	1.10	1.00	1.30	1.40	0.90
6/8/2018	0.20	1.20	1.00	0.80	0.50	1.30	1.10	1.40	1.50	1.00
6/15/2018	0.50	1.20	1.00	0.90	0.70	1.30	1.10	1.50	1.70	1.00
6/22/2018	1.25	0.80	0.70	0.80	0.60	1.00	0.80	1.50	1.90	1.10
6/29/2018	0.25	1.20	1.00	1.20	0.90	1.30	1.10	1.50	2.00	1.20
7/6/2018	0.01	1.30	1.00	1.50	1.20	1.50	1.20	1.60	2.10	1.30
7/13/2018	0.01	1.70	1.30	2.00	1.80	1.80	1.60	1.60	2.00	1.20
7/20/2018	0.01	1.60	1.30	1.90	1.90	1.90	1.50	1.50	2.00	1.20
7/27/2018	0.01	1.80	1.50	2.00	2.00	1.00	1.70	1.50	2.20	1.10
8/3/2018	0.01	1.60	1.30	1.70	1.90	0.50	1.50	1.40	1.70	1.00
8/10/2018	0.01	1.60	1.30	1.60	1.80	0.25	1.50	1.20	1.50	0.90
8/17/2018	0.01	1.60	1.30	1.40	1.60	0.10	1.50	1.00	1.30	0.70
8/24/2018	0.50	1.10	0.90	0.80	1.10	0.10	1.00	0.80	1.00	0.50
8/31/2018	0.20	1.00	0.80	0.25	0.50	0.10	0.90	0.60	0.80	0.40
9/7/2018	0.01	1.10	0.90	0.10	0.25	0.10	1.00	0.60	0.70	0.30
9/14/2018	0.01	1.10	0.90	0.10	0.10	0.10	1.00	0.50	0.70	0.30
9/21/2018	0.20	0.90	0.80	0.10	0.10	0.10	0.90	0.40	0.60	0.20
9/30/2018	0.01	0.80	0.60	0.10	0.10	0.10	0.70	0.40	0.60	0.20
TOTAL	7.20	25.20	20.60	18.45	17.85	16.25	23.70	24.80	31.40	17.20

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.





SOIL MOISTURE - WAITING FOR FALL RAINS

Soils are mostly very dry unless recently irrigated. Most folks who are still irrigating are cutting back to about what crops use each week and not trying to boost soil moisture. Crops, especially grasses slow down their water use as days shorten. They will take advantage of whatever water is available until temperatures drop.

Soil Moisture Education Workshops

Soil moisture measurement, technologies, and applications Supporting agricultural management and drought resilience

Two, day-long soil moisture workshops in Montana, 9AM – 4PM

- **Wednesday, Nov 7** – Lubrecht Experimental Forest in western MT
- **Friday, Nov 9** – Stillwater County Fairgrounds, Columbus, MT

- Why measure soil moisture?
- How does water move through soil?
 - How to measure soil moisture
- Applications of soil moisture measurements
- Soil moisture data from the Montana Mesonet
- Field demonstrations from technology representatives
- Breakout discussions of producer and manager needs

Lunch will be provided

Open to all: Farmers, ranchers, producers, extension agents, managers from county, state, and federal agencies, and everyone interested in soil management

***These workshops are funded by a grant from NIST,
National Institute of Standards and Technology***

With organization and support from the Montana Climate Office, UM Lubrecht Experimental Forest, MSU Extension Service, Stillwater County, and MT Institute on Ecosystems

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- KEEP IRRIGATING SMALL GRAINS UNTIL DESIRED MATURITY, 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. 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.