

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday June 21, 2019



This week had some warm and sunny days and some cool days with mixed clouds and a little rain. Next week looks similar with both sun and mixed thunderstorms. Crops grew significantly and most used 1 to 1 ½ inches of water over the week. All crops should use a little more next week. Most folks have sprinklers running this week and those cool days are the best to irrigate effectively (get more water into the soil). The Blackfoot River flow is dropping fast and late season drought is possible.

NOW IS THE TIME FOR ALL GOOD IRRIGATORS TO MAKE HAY – SO POUR IT ON!

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 - SUNNY AND WARM MIXED WITH COOLER AND SHOWERS



Warm and sunny weather dominated this week with a few cooler days and windy periods. A few brief thunderstorms dropped small amounts of rain over limited areas of cropland. Next week will start and end with the chance of showers and thunderstorms. Otherwise it looks warm with highs in the 70s and lows in the 40s. The 30- and 90-day predictions are for above average temperatures and average rainfall.

CROP WATER USE - SLOWED BRIEFLY BUT STILL TIME TO POUR IT ON!

Crop water use dropped below average due to cooler weather with most crops using 1 to 1 ½ inches this week. Early-planted spring grains have caught up with winter wheat and hay in crop water use. Water use will be similar next week with another mix of cooler and warmer weather. This is actually the perfect time to pour it on and boost soil moisture. 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 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	1.3	1.4 (1.3 - 1.6)	.20	9.3
PASTURE	1.1	1.2 (1.1 - 1.4)	.17	8.5
SPRING GRAINS	1.4	1.6 (1.5 - 1.7)	.23	5.0
WINTER WHEAT	1.5	1.6 (1.6 - 1.7)	.23	10.1
LAWNS	1.2	1.3 (1.2 - 1.5)	.19	9.2

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)

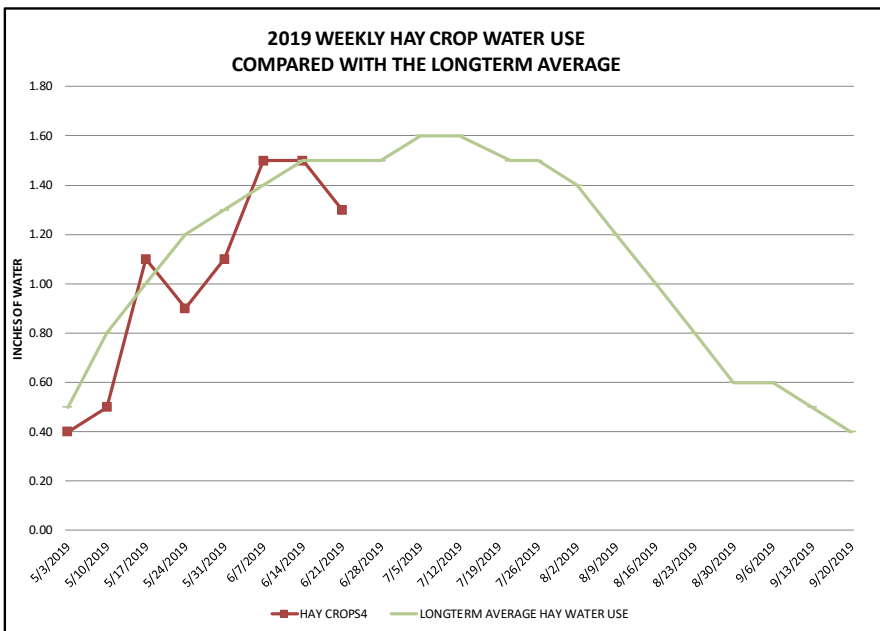
WEEK ENDING	RAIN ¹	2019 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/3/2019	0.30	0.40	0.50	0.10	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								1.50	2.00	1.20
7/5/2019								1.60	2.10	1.30
7/12/2019								1.60	2.00	1.20
7/21/2019								1.50	2.00	1.20
7/26/2019								1.50	2.20	1.10
8/2/2019								1.40	1.70	1.00
8/9/2019								1.20	1.50	0.90
8/16/2019								1.00	1.30	0.70
8/23/2019								0.80	1.00	0.50
8/30/2019								0.60	0.80	0.40
9/6/2019								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	4.25	9.30	8.50	5.00	3.60	10.10	9.20	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 - GOING FAST

Soil moisture dropped by 1 to 1 ½ inches this week unless you had significant rain. The good news is that there is still a little deep moisture (2-3 foot zone) for those with alfalfa or deep grass root systems and good soils. To boost soil moisture you must add more than the crop is using (1 to 1 ½ inches).

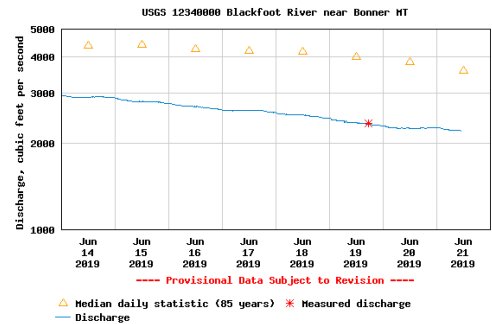


Cool days are perfect for effective irrigation that gets most of the water in the soil.

STREAMFLOWS AND DROUGHT 2019?

The Blackfoot river flow at Bonner today is **2210 CFS** which is about **50% of average** (4380 CFS). The Highest flow on this date was 16,600 (1899) and the lowest was 946 CFS (1977).

Late season drought conditions are looking more likely. Predictions for the next 90 days are for average rainfall and above average temperatures. Use it while you can.

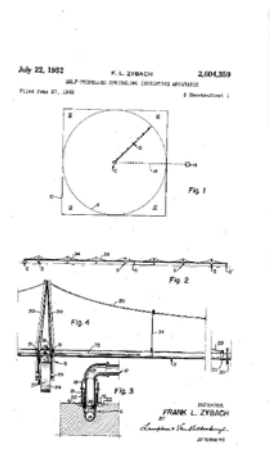


THANKYOU FRANK ZYBACH! - IRRIGATOR/INVENTOR

In 1948 Frank invented a new type of irrigation system – the center pivot – which changed the face of world agriculture. Pivots put water on more efficiently (evenly distributed across the field) and allowed soils formerly classified as un-irrigable to grow crops.

Center pivot irrigation boosted crop production and helped re-created the economy of the great plains following the dust bowl. The dependability of pivot irrigation replaced the uncertainty and variability of rainfall. They also are reshaping irrigation in the Blackfoot Drainage.

<https://www.smithsonianmag.com/innovation/how-center-pivot-irrigation-brought-dust-bowl-back-to-life-180970243/>



POUR IT ON - NOW IS THE TIME TO MAKE HAY AND BOOST SOIL MOISTURE!

Cooler days this week and next are the perfect time to boost soil moisture. Under these conditions more of the water you add goes into the soil and less evaporates from crop and soil surfaces. Most crops will use 1-1 ½ inches of water this week so anything more goes into storage. Now is also when crops put on the most production for the least water. Plan to build deep soil moisture just before harvest to reduce harm from cutting.



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. 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.