



BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday May 20, 2016

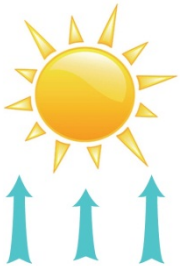
Temperatures cooled slightly this week to seasonal normal with scattered showers but only ¼ to ½ inch of rain total. This weather pattern will continue next week with hopefully more rain. The good news is that cool/showery weather is ideal for irrigations since most of it goes into the soil. Crop water use was about normal this week (1 inch/week) and crop growth is still ahead of schedule. Crop water use will be similar next week due to similar weather. The last page of this report is a summary of recommendations for the entire irrigation season.



WEATHER - COOLER WITH SHOWERS

We have finally hit some normal temperatures for this time of year and some showers which produced ¼ to ½ inch of rain. Showers and cooler temperatures will continue next week. There is still a potential for drought conditions to develop. The 30 day forecast indicates normal temperatures and rainfall. The 90 forecast indicates above

normal temperatures and normal rainfall.



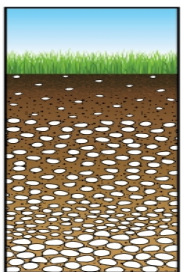
CROP WATER USE - MODERATE (ABOUT NORMAL)

Crop water use was about normal this last week due to cooler temperatures and a little moisture. It will be moderate next week with similar cool temperatures and scattered showers. Crop water use was much higher than average throughout April and early May.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	1.0	1.0 (0.9 - 1.2)	4.2
PASTURE	0.9	0.9 (0.7 - 1.1)	3.7
SPRING GRAINS	0.5	0.5 (0.4 - 0.7)	1.8
WINTER WHEAT	1.1	1.1 (0.9 - 1.3)	4.9
LAWNS	1.0	1.0 (0.8 - 1.2)	3.8

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 now include April



SOIL MOISTURE - TIME TO FILL IT UP

Cropland soil moisture remains very low throughout the drainage this week where not irrigated. Recent showers have not contributed significantly to soil moisture. This was a good week for irrigating. Cool and moist conditions allow most irrigation water to enter the soil with little evaporation. Conditions this year remain similar to 2013 and 2015, our last drought years. Remember what you did those years and how it worked out then plan accordingly.

WEEKLY TIPS

When Is The Best Time To Irrigate?

Some might say it is when your neighbor doesn't notice you using his water. Some might say it is anytime water is available (go junior irrigators!). There are many ideas and myths about when is the best time to irrigate.

Night

Ancient irrigators applied water by moonlight for mystical reasons but there is some logic to this. It's cooler, more humid and often less windy at night. More of the applied water is likely to end up in the soil contributing to crop production. This is even more important if you are applying small amounts at once (less than ½ inch). Night irrigation has become the norm for golf courses, urban landscaping and lawns. It mainly only works in the ag setting for pivots and drip since fields take too long to irrigate with wheel lines, hand lines and flood systems. However, there is more nighttime irrigation in the future of agriculture.

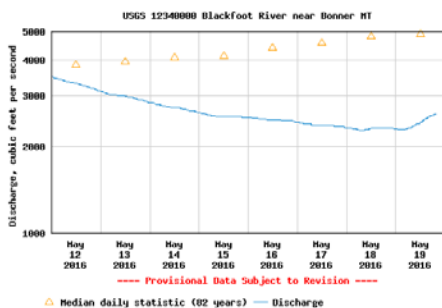
When It's Raining

Another great time to irrigate is when it's raining. The cooler temperatures and higher humidity makes irrigation more effective (more water goes into the soil and less evaporates). Very few rainstorms in the growing season actually add significantly to soil moisture. Most of our rainstorms only produce a few tenths of an inch of water. This small amount can quickly evaporate from crop and soil surfaces. Some folks have a concern for frost or ice damaging equipment and so they turn off their systems at night if it's raining and cold temperatures are forecast.

Time to Fill Up Your Soil and Keep Moisture Levels High.

May is the easiest time to fill up your soil moisture holding capacity, before crop water use gets high. For the next few weeks, crop water use for hay and pasture will be 1 - 1 ½ inches per week. Applying more than this amount will add to soil moisture storage.

DROUGHT 2016?



The Blackfoot River at Bonner actually came up slightly this week following a long decline. Today's flow is about 2,580 cfs versus an average of 5,530 cfs. The low flow for this date was 1,250 cfs in 1941 and the high was 14,000 cfs in 1997. Hopefully this is the start of a more moist period that will ensure an end to drought and fire concerns.

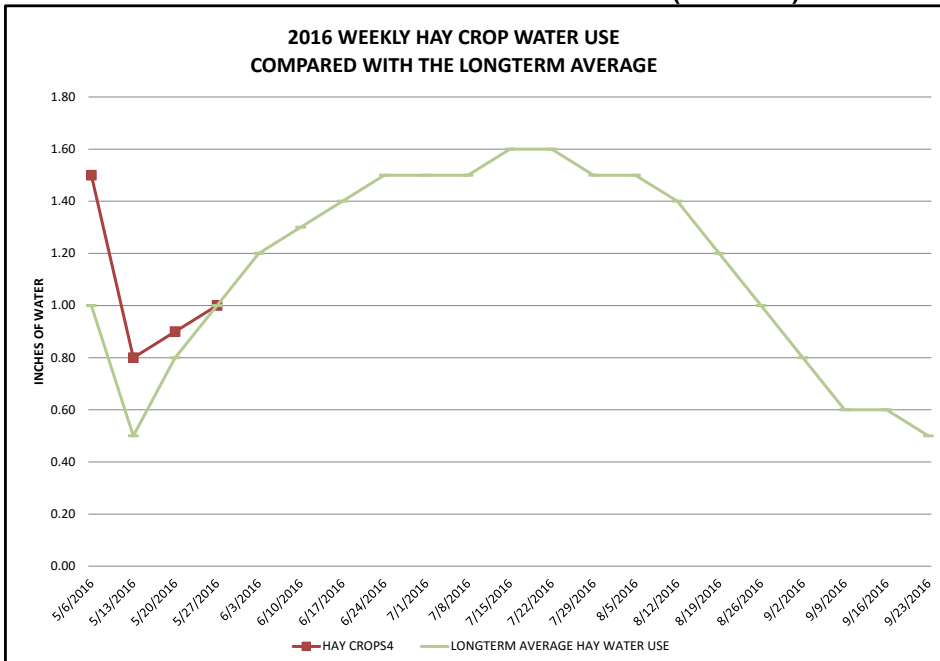
For further information contact Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

BLACKFOOT 2016 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

	RAIN ¹	2016 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	0.70	1.50	1.25	0.75	0.75	1.75	1.25	1.00	1.50	0.50
5/6/2016	0.20	0.80	0.70	0.25	0.25	0.90	0.70	0.50	0.80	0.20
5/13/2016	0.30	0.90	0.80	0.25	0.25	1.10	0.80	0.80	1.00	0.50
5/20/2016	0.01	1.00	0.90	0.50	0.25	1.10	1.00	1.00	1.10	0.70
5/27/2016								1.20	1.20	0.80
6/3/2016								1.30	1.30	0.90
6/10/2016								1.40	1.50	1.00
6/17/2016								1.50	1.70	1.10
6/24/2016								1.50	1.90	1.10
7/1/2016								1.50	2.00	1.20
7/8/2016								1.60	2.10	1.30
7/15/2016								1.60	2.00	1.20
7/22/2016								1.50	1.90	1.20
7/29/2016								1.50	2.20	1.10
8/5/2016								1.40	1.70	1.00
8/12/2016								1.20	1.50	0.90
8/19/2016								1.00	1.30	0.70
8/26/2016								0.80	1.00	0.50
9/2/2016								0.60	0.80	0.40
9/9/2016								0.60	0.70	0.30
9/16/2016								0.50	0.70	0.30
9/23/2016								0.40	0.60	0.20
9/30/2016								0.40	0.60	0.20
TOTAL	1.21	4.20	3.65	1.75	1.50	4.85	3.75	24.80	31.10	17.30

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 is reduced by approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.

CROP WATER WAS ABOVE AVERAGE UNTIL THIS WEEK (RED LINE)



THE BLACKFOOT DRAINAGE IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations with more detail provided throughout our 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.
- Stop irrigating small grains at the milk to soft dough stage but be sure there are 1- 2 inches of soil moisture left at this stage to prevent kernels from shrinking.

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!

- 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.