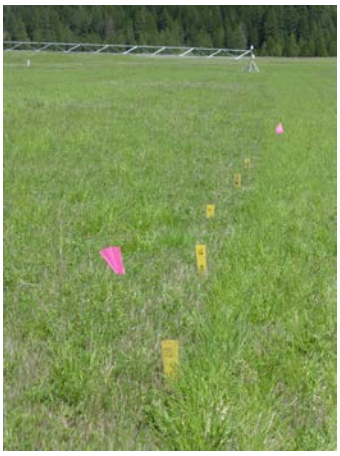
BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday June 15, 2018

Rain gauges have not worked so hard in years! Another week, another ¼ - ½ inch of rain for most folks and even more for some. Crops are exploding and irrigation is in full swing. Another rainy weekend is predicted followed by a week of showers and thunderstorms mixed with warm temperatures. Crop water use will remain below average at 1 – 1 ½ inches. Long-range forecasts still predict above average temperatures and below average rainfall for the rest of the season. It actually feels like we might miss the drought conditions of the past 7 years. 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 – RAINY WEEKEND THEN SHOWER/SUN MIX

Another week, another significant rainstorm/hailstorm bringing ¼ to ½ inch across most croplands. Some folks had up to 1 inch. Next week's forecast includes rain over the weekend then mixed showers and sun. High temperatures should be in the 70s. The 30- and 90-day forecasts continue to suggest above normal temperatures and below normal rainfall.



CROP WATER USE – STILL BELOW AVERAGE BUT UP

Crop water use was again below normal this week and is likely to remain slightly below normal next week (chart page 2). Most folks will be delaying harvest this year to let crops catch up and reach peak production before cutting. The table and chart on Page 2 summarize the entire irrigation season and compare it with average, hot and cool conditions.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS[1]		SEASON TOTAL[2]
HAY CROPS	**1.2**	**1.3**	(1.2 – 1.5)	6.0
PASTURE	**1.0**	**1.1**	(0.9 – 1.3)	5.0
SPRING GRAINS	**0.9**	**1.1**	(0.8 – 1.1)	2.9
WINTER WHEAT	**1.3**	**1.4**	(1.2 – 1.5)	6.3
LAWNS	**1.1**	**1.2**	(1.0 – 1.4)	5.8

[1]Expected water use (range if weather becomes cooler or hotter than expected)
[2]Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

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

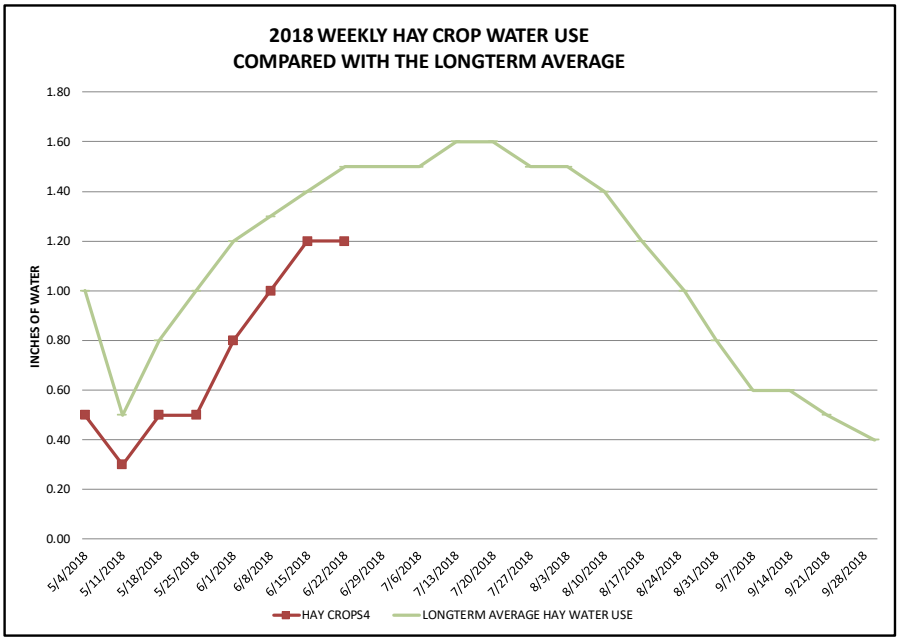
	RAIN[1]	2018 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE POTENTIAL CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.50	0.50	0.40	0.10	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								1.50	1.90	1.10
6/29/2018								1.50	2.00	1.20
7/6/2018								1.60	2.10	1.30
7/13/2018								1.60	2.00	1.20
7/20/2018								1.50	2.00	1.20
7/27/2018								1.50	2.20	1.10
8/3/2018								1.40	1.70	1.00
8/10/2018								1.20	1.50	0.90
8/17/2018								1.00	1.30	0.70
8/25/2018								0.80	1.00	0.50
8/31/2018								0.60	0.80	0.40
9/7/2018								0.60	0.70	0.30
9/14/2018								0.50	0.70	0.30
9/21/2018								0.40	0.60	0.20
9/30/2018								0.40	0.60	0.20
TOTAL	**4.70**	**6.00**	**5.00**	**2.90**	**2.00**	**6.30**	**5.80**	**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 – DROPPING AS CROPS TAKE OFF

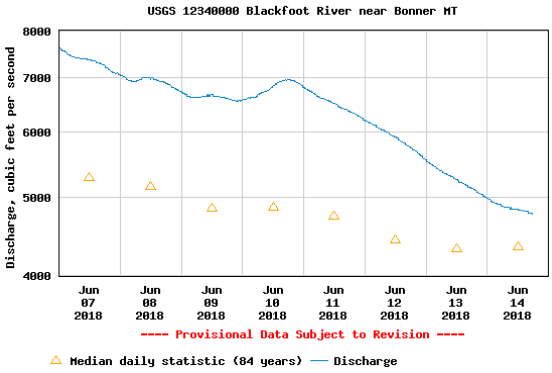
Rainfall has reduced the workload of many irrigators so far this year. We rarely get rainstorms large enough to really help - most are only a fraction of weekly crop water use. Irrigators have recently only needed to top off their soil moisture holding capacity. As a result, soil moisture levels throughout the drainage continue to be higher than normal. Things have still been variable so check yourself to be sure where your soil moisture is at. If your crop is showing significant growth, it has to be using water so expect soil moisture to drop.

It's ideal to keep your soil moisture above 50% of water holding capacity for best production. This is a great goal for our peak production period of June when you literally make the most hay. At 50% of water holding capacity the soil can be formed into a ball (top photo). The hand gets dirty and appears moist (bottom photo) but not shiny wet. Call if you have questions about your soil moisture or visit the irrigation guide on the Challenge website.

WEEKLY TIPS

Flooding and Streamflows

Today the Blackfoot river flow is about 4,760 CFS at Bonner compared with an average of about 5,070. The highest level recorded for this date was 13,500 (1899) and the lowest 1,070 (1987). The hydrograph below shows a rapidly flow decrease over the last week and the end of flood worries.



Drought?

The chance of drought in 2018 is low but not zero. As we saw last year, warm temperatures and no rain can change things quickly. It still looks like a good year to do those things that need a little more water like a cover crop, new seeding or second cutting. Otherwise, just be happy about all that money you saved on early season irrigation. Hopefully we won't use the word "drought" until next year.

Soil Health Considerations from *Brad Weltzien, Blackfoot Land Steward*

A variety of soil health building tools are available and have shown promising results across the nation. The challenge is to identify which tools fit best in your particular situation and how to integrate them into your operation. Tools may be used to improve degraded areas or simply enhance the conditions of typical cropland and pastures. In general, the primary goal is to increase soil organic matter – resulting in greater water holding capacity, infiltration, microbial activity, resistance to disease, and nutrient cycling. Over time, soil building tools will likely lead to greater production and resilience, while decreasing inputs such as fertilizer and pesticides. The key to any of these tools is patience – building soils takes time and commitment – and many soil health pioneers attest that it is well worth the wait and effort. Below are a handful of soil health tools worth considering.

- Diverse pasture/crop species that complement each other through varying root depths, nutrient inputs, beneficial insects, and livestock nutrition to name a few.
- Livestock integration into crop systems to increase organic matter and physical trampling of plant residue into the soil surface.
- Grazing rotations that provide adequate rest periods for plants, residual plant litter, and concentrated animal waste.
- Grazing systems that increase stock density, reduce field size, and reduce grazing periods.
- Winter feeding systems – such as bale grazing – that build organic matter in strategic locations.
- Additional infrastructure is often needed to implement such practices such as cross-fencing and stockwater development.

Many producers are experimenting with these tools in the Blackfoot. Blackfoot Challenge staff and partners are available to discuss the options for tools, funding and technical assistance. If you would like additional information or site-specific recommendations, please contact **Brad Weltzien, Blackfoot Challenge land steward, at 406-793-3900.**

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.
- 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. 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.