



# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday June 30, 2017

It was another good week for crops and irrigation in the Blackfoot drainage. Little or no rain fell across most areas but moderate temperatures provided good growing conditions. Crop water use is high and will increase again to what may be the highest levels of the year next week – approaching 2 inches. Soil moisture dropped dramatically in fields not irrigated but this moisture was put to good use as crop growth. Hay harvest has begun and small grains are mostly headed out. Yields look good for all crops. Blackfoot River flows are dropping fast and are now below average for the first time in 2017. A condensed overview of the whole irrigation season is on the last page of this report so you can plan ahead. Please contact Jennifer Schoonen - Blackfoot River Steward (406-360-6445) for more information on this and other Challenge programs.



### WEATHER - HOT, SUNNY

Last week again saw little or no rain on most croplands in the drainage. A few folks had scattered showers that produced as much as ¼ inch. A mix of sunny conditions, scattered clouds and moderate temperatures were great for growing crops. The coming week is looking sunny and hot (high 80s). The 30-day forecast indicates normal temperatures and rainfall. The 90-day forecast indicates above normal temperatures and rainfall.



### CROP WATER USE - ABOVE NORMAL AND RISING

Crop water use was above average last week (table and chart page 3) and will increase even more next week due to hotter temperatures. Crop water use for hay crops drops to about 1/3 of the potential the first week after cutting and to about 2/3 of the potential the second week. By the third week, crop water use has returned to its full potential. So if the crop water use for hay is 1 ½ inches a week, just cut hay will use ½ inch the first week, 1 inch the second and 1 ½ inches the third week after cutting.

<b>WATER USE IN INCHES</b>	<b>LAST 7 DAYS</b>	<b>NEXT 7 DAYS<sup>1</sup></b>	<b>SEASON TOTAL<sup>2</sup></b>	<b>DAILY FORECAST<sup>3</sup></b>
<b>HAY CROPS</b>	<b>1.7</b>	<b>1.8</b> (1.3 - 1.6)	10.4	.25
<b>PASTURE</b>	<b>1.6</b>	<b>1.7</b> (1.2 - 1.5)	9.7	.24
<b>SPRING GRAINS</b>	<b>0.8 - 1.8</b>	<b>0.9 - 2.0</b> (0.8 - 1.8)	4.0 - 7.0	.12 - .27
<b>WINTER WHEAT</b>	<b>1.8</b>	<b>1.9</b> (1.5 - 1.8)	11.5	.27
<b>LAWNS</b>	<b>1.7</b>	<b>1.8</b> (1.3 - 1.6)	10.5	.25

<sup>1</sup>Expected water use (range if weather becomes cooler or hotter than expected)

<sup>2</sup>Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but now include April

<sup>3</sup>Predicted average daily crop water use over the next week.



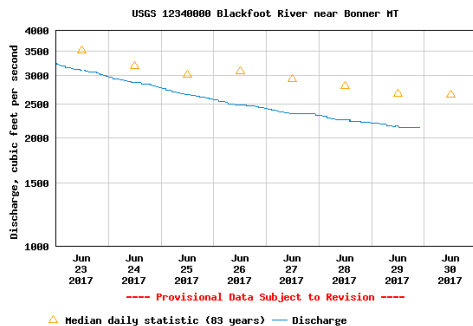
## SOIL MOISTURE – KEEP IT UP!

Soils that were not irrigated last week dried out quickly and next week is going to be hotter with even higher crop water use. Hot temperatures next week will especially heat up and dry out the surface soil. Folks with new plantings should consider light irrigations to promote good establishment by maintaining moisture and cooling the surface.

Irrigators with alfalfa or those who want to enhance fall grazing will keep soil moisture levels high as harvest approaches. This will take a big effort due to high crop water use at this time.

When is your soil full? Soil near 50% of its water holding capacity soil forms a ball when squeezed but leaves only a little moisture on the hand (top photo). Soil near 100% of its water holding capacity forms a ball and leaves your hand moist (bottom photo). Call anytime if you have questions about evaluating your soil moisture or other irrigation topics.

## WEEKLY TIPS



### Water Supply and Streamflow

The Blackfoot River finally dropped from above average flows to below average for the first time this growing season (graph at left). Blackfoot streamflow predictions in early June for June-July were 109% of normal. Those predictions will be updated next week. Current flow at Bonner is 2,100 CFS which is about 1,000 CFS lower than the average for this date of 3,100 CFS. The lowest flow on June 30 was 619 CFS in 1977 and the highest 12,500 CFS in 1899.

### BUILD UP SOIL MOISTURE BEFORE CUTTING!

The highest stress period for hay crops is at harvest so try to store up soil moisture before cutting. Leave time after your last irrigation to let the surface soil dry out. Get back across the cut field as soon as possible. If you want to build up your soil moisture after cutting, you will need to apply **more** than the 1 ½ – 2 inches crops are using each week. This assumes you actually have water after cutting. Otherwise, relax and sit in the shade.

### REMEMBER TO LET THE SURFACE SOIL DRY OUT BEFORE HARVEST!

Remember to stop irrigating and let the surface soil dry before harvest. The surface layer of sandy soils may dry out in a few days but clayey soils may take 7-10 days. Irrigate as close to harvest as possible and then getting back across the field quickly. Even if you do not go for a second cutting or pasture, apply at least one irrigation after cutting to help plants recover. If you don't plan to irrigate much after harvest and are growing grass hay, you can stop irrigating before cutting and let your crop use up the remaining soil moisture. This reduces the crop moisture content and speeds drying on the ground.

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](mailto:barry@landandwaterconsulting.net)

**BLACKFOOT 2017 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE** (INCHES OF WATER)

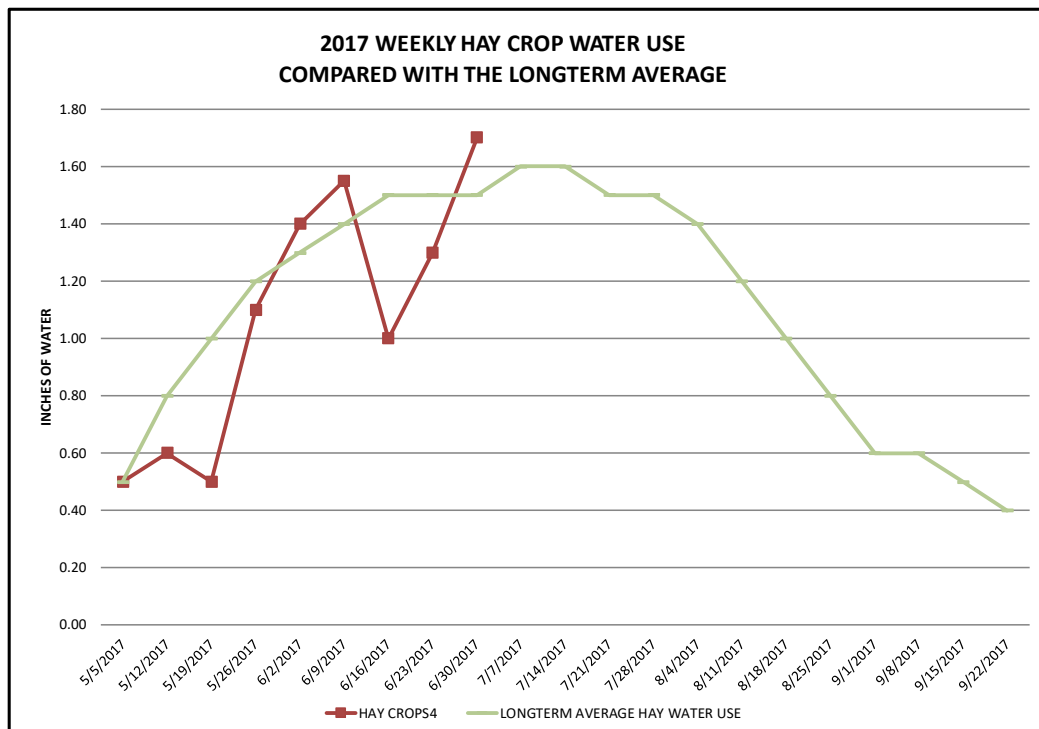
	RAIN <sup>1</sup>	2017 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE POTENTIAL CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/5/2017	0.02	0.50	0.40	0.10	0.10	0.50	0.50	0.50	0.80	0.20
5/12/2017	0.25	0.60	0.70	0.10	0.10	0.90	0.70	0.80	1.00	0.50
5/19/2017	1.00	0.50	0.60	0.10	0.10	0.60	0.50	1.00	1.10	0.60
5/26/2017	0.00	1.10	1.00	0.20	0.10	1.10	1.10	1.20	1.30	0.80
6/2/2017	0.25	1.40	1.30	0.60	0.20	1.50	1.40	1.30	1.40	0.90
6/9/2017	0.50	1.55	1.35	1.00	0.30	1.60	1.45	1.40	1.50	1.00
6/16/2017	1.50	1.00	0.90	1.20	0.60	1.20	1.00	1.50	1.70	1.00
6/23/2017	0.00	1.30	1.20	1.40	0.80	1.40	1.30	1.50	1.90	1.10
6/30/2017	0.25	1.70	1.60	1.80	1.20	1.80	1.70	1.50	2.00	1.20
7/7/2017								1.60	2.10	1.30
7/14/2017								1.60	2.00	1.20
7/21/2017								1.50	1.90	1.20
7/28/2017								1.50	2.20	1.10
8/4/2017								1.40	1.70	1.00
8/11/2017								1.20	1.50	0.90
8/18/2017								1.00	1.30	0.70
8/25/2017								0.80	1.00	0.50
9/1/2017								0.60	0.80	0.40
9/8/2017								0.60	0.70	0.30
9/15/2017								0.50	0.70	0.30
9/22/2017								0.40	0.60	0.20
9/29/2017								0.40	0.60	0.20
<b>TOTAL</b>	<b>5.27</b>	<b>10.35</b>	<b>9.65</b>	<b>6.60</b>	<b>3.60</b>	<b>11.50</b>	<b>10.45</b>	<b>24.80</b>	<b>31.30</b>	<b>17.10</b>

<sup>1</sup> 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)

<sup>2</sup> **This years** maximum water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Will vary slightly across the drainage.

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

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



## 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.