



# BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

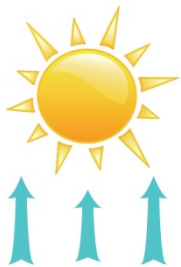
Friday September 16, 2016

This last week saw a few scattered showers and cool to warm temperatures. There was snow on the mountaintops. Most local croplands had about ¼ inch of rain. Next week looks slightly cooler and wetter. Weekly potential crop water use was well above average last week at ¾ - 1 inch and will be slightly lower next week. River flows are still low and drought management plans are still in effect – call Jennifer with questions. The last page of this report is a summary of recommendations for the entire irrigation season.



## WEATHER - WARM AND DRY

Cool temperatures and rain dominated this last week with most croplands getting ¼ to ½ inch but some a little more. Warmer, drier weather is forecast for next week with high temperatures in the 60s and 70s. The 30 day forecast predicts normal temperatures and rainfall. The 90 day forecast says above normal temperatures and rainfall. This year is the hottest on record worldwide since reliable records started in the 1880s.



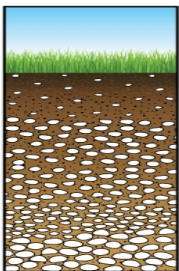
## CROP WATER USE - SLOWING NEXT WEEK WITH COOL TEMPS

Potential crop water use will fall next week with cooler temperatures and scattered rainstorms. Crop water use was above average throughout April, below average in May, bounced around average in June and stayed above average for most of the time since June (chart page 3).

<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>HAY CROPS</b>	<b>1.0</b>	<b>0.9</b> (0.8 - 1.1)	<b>26.5</b>
<b>PASTURE</b>	<b>0.7</b>	<b>0.7</b> (0.6 - 0.9)	<b>22.9</b>
<b>SPRING GRAINS</b>	<b>0.1</b> (Harvested)	<b>0.1</b> (0.0 - 0.2)	<b>20.2</b>
<b>WINTER WHEAT</b>	<b>0.1</b> (Harvested)	<b>0.1</b> (0.0 - 0.2)	<b>13.8</b>
<b>LAWNS</b>	<b>0.9</b>	<b>0.8</b> (0.7 - 1.0)	<b>24.9</b>

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

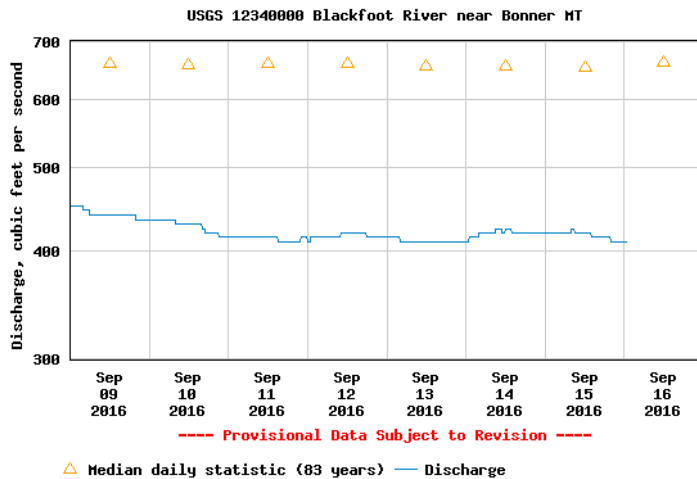
<sup>2</sup>Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but now include April



## SOIL MOISTURE - LOW UNLESS IRRIGATED

Soil moisture is low and most plants are growing very slowly or going into dormancy. Most folks are not irrigating much until water levels come up some more.

## WEEKLY TIPS



### DROUGHT 2016

The Blackfoot River flow at Bonner has bounced around 425 or so all week. Cooler weather and showers should bring the flow up further next week. It is still below 500 cfs - the main flow trigger in Blackfoot drought management but at least is going the right way. Today's flow is near 410 cfs compared with an average of about 670 cfs. The low flow for this date was near 363 cfs (1988) and the high was near 1290 cfs in 1965.

Predictions of normal temperatures and rainfall in the 30 day weather forecast suggests that

drought conditions may continue to improve. But right now the river is looking pretty small and I still wouldn't want to be a fish, raising a fish family with the future that's predicted.

### FREEZE ALERT! DON'T GET CAUGHT WITH ICE IN THE WRONG PLACES



An excellent local irrigator reminded me of the drain valves that stick and the nozzles that plug and the various other parts that can cause expensive damage from ice. Don't get caught by the first hard freeze of the season. Winterize. Decide what improvements make sense this year and plan/order/install/test as much as possible this year before spring madness is back. Think about the entire system from *diversion* to inlet to *fish screen* to *ditch* to *pipe* to *pump* to *sprinklers* to *runoff*. Also - low summer stream flows may make work on diversions easier

and less disruptive.

### LATE SEASON IRRIGATION-IS IT WORTH IT?

Although we like to think that winter snow and spring rain will fill up our soils for the growing season, most local hay soils start the growing season only  $\frac{1}{4}$  -  $\frac{1}{2}$  full. Late fall irrigation is practiced by some irrigators as a way to boost spring moisture for next year's crop. This practice gets mixed reviews. Unless the field is fallow, crops will continue to remove soil moisture throughout the winter and early spring. This can dry out the surface soil so that by the start of the active growing season (April-May in the Blackfoot drainage) any added fall irrigation has been lost from the surface soil. However, if enough late fall irrigation is applied to fill up the **lower soil layers** (below 1 foot), this deeper soil moisture should be available for the next crop season since crops remove less soil from these deeper depths. Filling up these lower soil layers requires applying 4-6 inches.

**You are probably better off waiting and doing a good job of irrigating next spring.** Be aware of winter snowpack, spring snowmelt and weather predictions to decide how early to start. Early season irrigation will become increasingly important if the climate continues to warm and dry.

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

	RAIN <sup>1</sup>	2016 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
5/6/2016	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	1.00	0.60	0.50	0.30	0.25	0.70	0.60	1.20	1.20	0.80
6/3/2016	0.20	1.00	0.90	0.70	0.40	1.10	1.00	1.30	1.30	0.90
6/10/2016	0.10	1.50	1.40	1.25	0.70	1.60	1.50	1.40	1.50	1.00
6/17/2016	0.20	1.25	1.20	1.30	0.70	1.40	1.20	1.50	1.70	1.10
6/24/2016	0.10	1.50	1.40	1.60	1.20	1.50	1.50	1.50	1.90	1.10
7/1/2016	0.01	1.70	1.50	1.80	1.80	1.10	1.60	1.50	2.00	1.20
7/8/2016	0.01	1.70	1.60	1.80	1.80	0.50	1.50	1.60	2.10	1.30
7/15/2016	1.25	1.20	1.00	1.30	1.30	0.10	1.20	1.60	2.00	1.20
7/22/2016	0.10	1.60	1.40	1.90	2.00	0.10	1.50	1.50	1.90	1.20
7/29/2016	0.00	1.70	1.50	1.90	1.90	0.10	1.60	1.50	2.20	1.10
8/5/2016	0.00	1.70	1.50	1.90	1.90	0.10	1.60	1.40	1.70	1.00
8/12/2016	0.25	1.30	1.00	1.00	1.20	0.10	1.20	1.20	1.50	0.90
8/19/2016	0.01	1.30	1.00	0.75	0.50	0.10	1.20	1.00	1.30	0.70
8/26/2016	0.10	1.20	1.00	0.50	0.25	0.10	1.10	0.80	1.00	0.50
9/2/2016	0.25	1.30	1.00	0.25	0.10	0.10	1.20	0.60	0.80	0.40
9/9/2016	0.30	0.70	0.60	0.10	0.10	0.10	0.70	0.60	0.70	0.30
9/16/2016	0.20	1.00	0.70	0.10	0.10	0.10	0.90	0.50	0.70	0.30
9/23/2016								0.40	0.60	0.20
9/30/2016								0.40	0.60	0.20
<b>TOTAL</b>	<b>5.29</b>	<b>26.45</b>	<b>22.85</b>	<b>20.20</b>	<b>17.70</b>	<b>13.75</b>	<b>24.85</b>	<b>24.80</b>	<b>31.10</b>	<b>17.30</b>

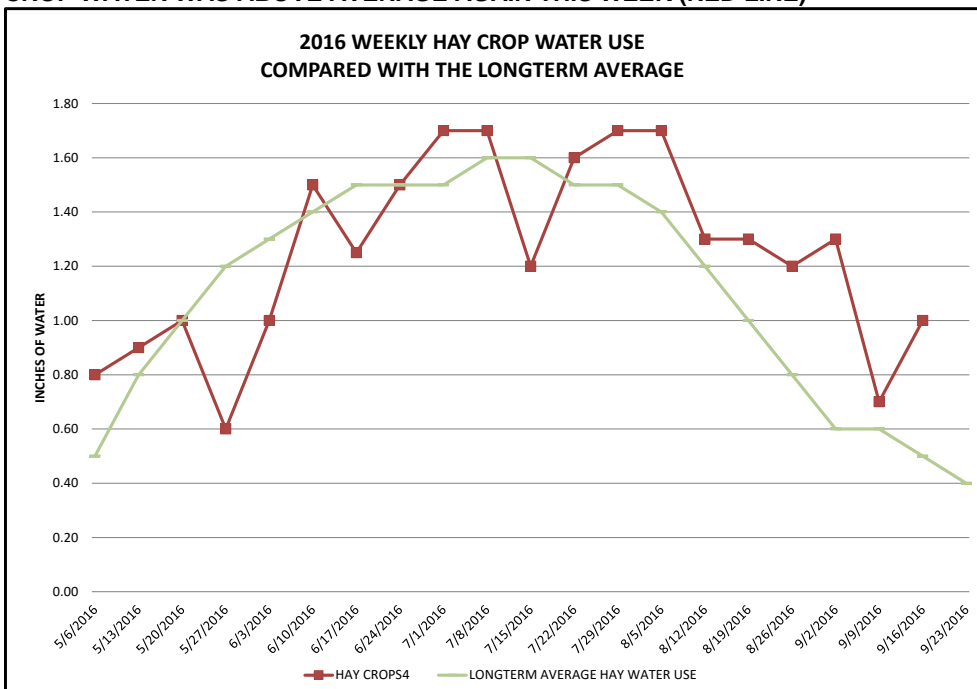
<sup>1</sup> Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April, May and Sept, 0.15-June and August, 0.2-July)

<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 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 AGAIN 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 and water availability. Irrigate new plantings as needed.
- Some folks irrigate for pasture following their one hay cutting. Irrigate according to pasture needs and with consideration for other water users.
- Reduce river withdrawals by rotating systems, reducing the amount area irrigated at one time and by delaying irrigation until streamflows recover.



### 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 and water availability. Irrigate new plantings as needed. Plan for higher temperatures, earlier springs and less water. Next year put some acres in lower water use crops including annual crops, alter rotations, reseed/inter-seed or come up with your own ideas to reduce overall ranch water use.