



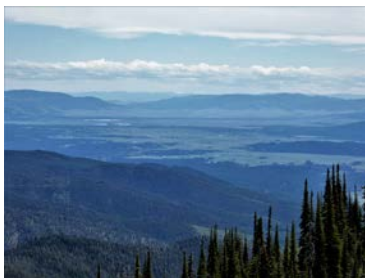
# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday June 16, 2017

Wow – a major rain event during the peak of the growing season – how unusual! Thanks to everyone doing their rain dances this week, especially those in the upper drainage. Despite cooler temperatures, established crops grew well. New plantings were slowed by the cooler weather but these new seedbeds are well-watered now and ready for the coming warm weather.

For the first time in decades, I can report that many local crop root zones are full to their soil water holding capacities during June. The 1-2 inches of rainfall combined with recent irrigations and reduced crop water use has left many Blackfoot cropland soils full. See more on soil moisture below. Snowpack and streamflow predictions remain good for the irrigation season. A condensed overview of the entire irrigation season is on the last page of this report. Please contact Jennifer Schoonen - Blackfoot River Steward (406-360-6445) for more information on this and other Challenge programs.



### WEATHER – RETURNING WARMTH AND SUN

Most summer rainstorms don't contribute much if anything to soil moisture since they usually come in small amounts and evaporate from crop and soil surfaces. But when you get 1-2 inches it makes a difference by boosting soil moisture and by making irrigation more effective (more gets in the soils). The weekend may have showers but next week will be warm and sunny. The 30-day forecast still indicates normal temperatures and above average rainfall. The 90-day forecast indicates above normal temperatures and normal rainfall.



### CROP WATER USE – DOWN LAST WEEK & UP NEXT

Crop water use dropped below average last week but should increase to normal with the upcoming warm, sunny week (table and chart page 3). Remember that these figures represent water amounts needed to maximize production when nothing else is limiting. Your goals and situation may be met using less water.

<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>1.0</b>	<b>1.4</b> (1.3 - 1.6)	7.4	.20
<b>PASTURE</b>	<b>0.9</b>	<b>1.3</b> (1.2 - 1.5)	6.9	.18
<b>SPRING GRAINS</b>	<b>0.6-1.2</b>	<b>0.9 - 1.9</b> (0.3 - 1.8)	3.4	.12 - .18
<b>WINTER WHEAT</b>	<b>1.2</b>	<b>1.7</b> (1.5 - 1.8)	8.3	.24
<b>LAWNS</b>	<b>1.0</b>	<b>1.4</b> (1.3 - 1.6)	8.5	.20

<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 - UP IN MOST FIELDS - KEEP IT UP!

Many irrigators managed to fill up their crop root zones last week due to 1-2+ inches of rain combined with reduced crop water use and some added irrigation. Cooler temperatures and higher humidity meant that most of the applied water got into the root zone instead of evaporating from crop and soil surfaces. By the end of the week, many folks with low water holding capacity soils (sandy, rocky) were full and stopped irrigating. This is now the perfect opportunity to keep your soil moisture high as we approach peak crop growth.

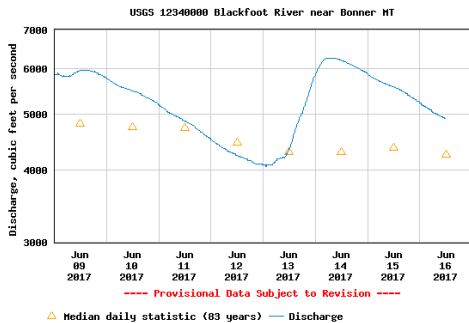


When is your soil full? Soil near 50% of its water holding capacity soil forms a ball when squeezed but leaves only a little moisture on the hand (top photo). Soil near 100% of its water holding capacity forms a ball and leaves your hand moist (bottom photo). Call anytime if you have questions about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

Look in front of your pivot and behind to get a better idea of what soils look like when near 100% of water holding capacity. Walking around the pivot gives you a good idea how quickly the surface soil dries after irrigation.

## WEEKLY TIPS

### Water Supply and Streamflow



River flow has been on a rollercoaster from 4000 to 6000 CFS this week (graphs at left). Blackfoot streamflow predictions for June-July are 109% of normal so water should be available throughout the main irrigation season. Current Blackfoot river flow is about 4,900 CFS at Bonner which is near average for this date. The lowest flow on June 16 was 995 CFS in 1987 and the highest was 12,500 CFS in 1899.

## ONE OF THE BETTER HARVESTS IN YEARS

Crops throughout the Blackfoot drainage are looking better than they have in years. Although some local luminaries of the ag community get a great crop most years, everyone seems to be benefitting from the specific blend of weather this year. Remember that June is the main growing season for all local crops and the time to pour on the water! Even with recent rainfall, watch new seedings closely to ensure good germination and establishment.

## Watch for Results from Local Hay and Pasture Improvements

Sharing local experience is one of our goals. Irrigators are always experimenting with new (and old) methods. There are a lot of new hay and pasture seedings throughout the drainage with a variety of species mixes. These seedings used a range of techniques including chemical pre-treatment, traditional tillage and no-till planting. Species include a range of the best current choices and some new options. We will review how these efforts turn out and let you know about opportunities to view field trials across western Montana.

For further information contact [Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445](mailto:Jennifer.Schoonen@blackfootchallenge.com) or [Barry Dutton, Professional Soil Scientist, 406-240-7798 \[barry@landandwaterconsulting.net\]\(mailto:barry@landandwaterconsulting.net\)](mailto:Barry.Dutton@landandwaterconsulting.net)

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

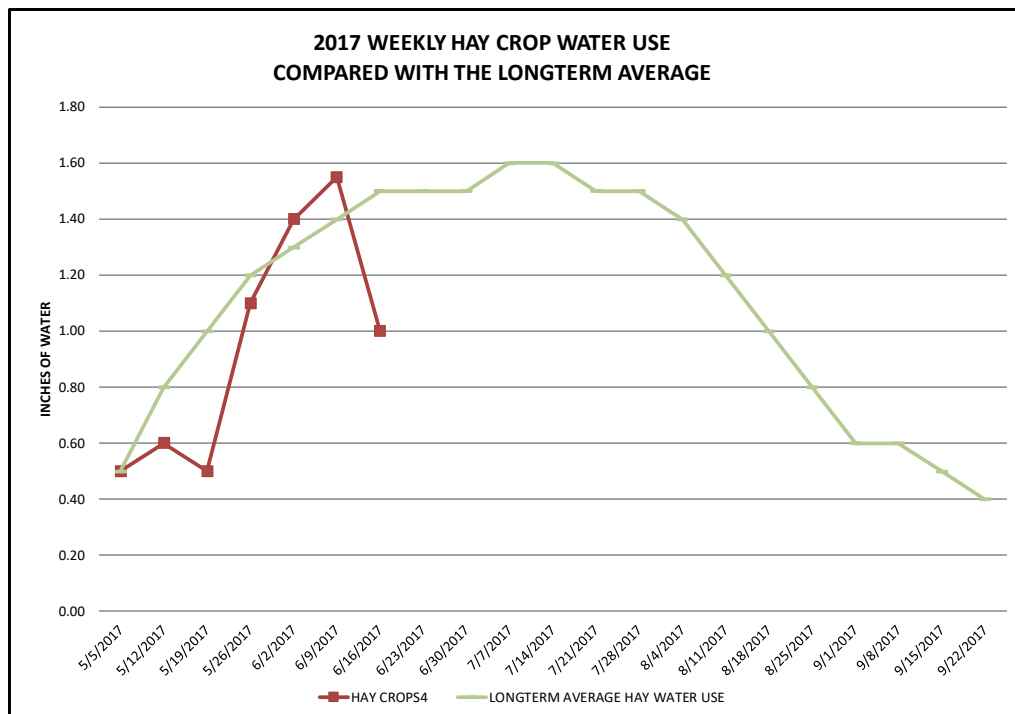
	RAIN <sup>1</sup>	2017 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE POTENTIAL CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
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	1.10
6/23/2017								1.50	1.90	1.10
6/30/2017								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>5.02</b>	<b>7.35</b>	<b>6.85</b>	<b>3.40</b>	<b>1.60</b>	<b>8.30</b>	<b>7.45</b>	<b>24.80</b>	<b>31.30</b>	<b>17.20</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.