



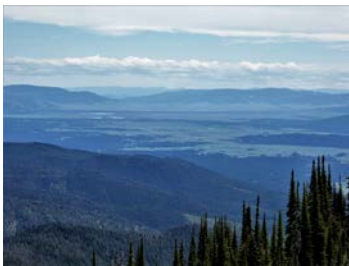
# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday May 26, 2017

What a difference a week makes! Sprinklers are on throughout the drainage in perfect timing with rising crop water use. Surface soil moisture dropped quickly this week (unless irrigated) as crops experienced the first large growth spurt of the season. I still marvel at how crop growth isn't a slow gradual process but happens in spurts when soil moisture and air temperatures are ideal. Later in the season when crops are higher you can hear these growth spurts, especially in irrigated fields. You're not crazy - it's OK for irrigators to "hear things" - it's the crop telling you *I'm Well-irrigated*.

If you haven't started irrigating, you need to get out and have at it. There is another week of ideal crop weather ahead and soils will continue to dry quickly from crop use. It's also time to fill your soils root zone to its water holding capacity. Then add more water according to weekly crop use (more info below). For a condensed overview of suggestions for the entire irrigation season see 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 - WARMTH RETURNS

The cool, moist early season turned warm and dry this week. Only a trace of rain fell on croplands if any. Temperatures rose to seasonal norms with a mix of clear and partly cloudy skies. Warm, sunny conditions are expected again this next week with little possibility of significant rain showers. The 30-day forecast indicates normal temperatures and above average rainfall. The 90-day forecast indicates above normal temperatures and normal rainfall.



### CROP WATER USE - UP AND RISING FAST

Crop water use increased dramatically this week due to warmer, drier and clearer conditions. Crop water use was near the seasonal average (table and chart page 4). It will be warm and sunny for most of the coming week so expect continued good crop growth from well-watered plants.

<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>1.1</b>	<b>1.4</b> (1.0 - 1.5)	3.4	.20
<b>PASTURE</b>	<b>1.0</b>	<b>1.2</b> (1.0 - 1.4)	3.3	.18
<b>SPRING GRAINS</b>	<b>0.2</b>	<b>0.3</b> (0.3 - 0.4)	0.6	.02
<b>WINTER WHEAT</b>	<b>1.1</b>	<b>1.5</b> (1.1 - 1.6)	4.0	.22
<b>LAWNS</b>	<b>1.1</b>	<b>1.4</b> (1.0 - 1.5)	3.6	.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 - DROPPED QUICKLY THIS WEEK

Soil moisture levels throughout the drainage this week dropped quickly as crops responded to warmer weather. Most sites with hay, pasture or winter wheat crops saw an inch of soil moisture loss, mainly from the surface foot. You should fill up your soil root zone while water supplies are plentiful and crop water use has not reached its peak. See the Tips below for more info.



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.

## WEEKLY TIPS

### Water Supply and Streamflows

Blackfoot streamflow predictions for May-July are for 120% of normal so water should be available throughout the main irrigation season. Current Blackfoot river flow is about 6,800 CFS at Bonner compared with an average flow of 6,010 CFS. The lowest flow on this date was 1060 CFS in 1941 and the highest was 13,400 CFS in 2011.



**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 higher with warmer temperatures. 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.

Right now, most hay and pasture crops that have not been irrigated need about 2 inches of water to fill up the 3-foot root zone if the soil is sandy and rocky. Soils with few rocks and more silt and clay may take 2-3 inches. This is in addition to the 1 - 1 ½ inches of crop water use expected this week.

### Not Sure How Much Water to Apply?

**JUST LOOK!** It's not rocket science, check your soil moisture with a soil probe or shovel until the soil is moist to a depth of 3 feet for hay and pasture crops or 2 feet for annual crops. If it looks and feels moist – you're good. If its dusty and dry – keep irrigating. Call for a guide to soil moisture estimating.

### Roots

Irrigate deeply at the start of the irrigation season to promote deep root growth. If you allow the soil to dry out and then only apply 1 inch at a time, you will only moisten the top 6-8 inches. This means your crop is looking for all its moisture and nutrients in this thin soil layer. Irrigate new crops deeply after they are established to moisten the entire root zone and lead your roots to deeper depths.

## Hay and Pasture Seeding Options.

Seed mixes have traditionally been simple – two or three species, often a couple grasses and a clover. Elk, weed-free status, grass-fed labeling and other concerns also affect plant choices. The most common hay and pasture grasses throughout the Blackfoot drainage seem to be smooth brome, timothy, Kentucky bluegrass, orchardgrass and ryegrass. Alfalfa and clovers are the most common non-grass plants. Lake County is currently conducting experiments on new forage species and planting techniques and will offer field tours later in the year. The list below represents our current species suggestions for replanting or inter-seeding irrigated pastures and hayfields. It is only meant to be a starting point for discussion and we would like your comments and experience with these and other potential hay and pasture crops.

An emerging practice is to follow nature and be more diversified. A great ecological principal is “diversity is stability.” I suggest irrigated mixes be dominated by 2-4 species especially meadow brome and thickspike wheatgrass. The remainder should be chosen from those listed below. If you do not have elk, weed-free, or other concerns you should include at least one legume (most likely alfalfa or clover). Also consider a plant that builds organic matter, reduces compaction, increases aeration or otherwise improves soil health. You can add any of the other plants in small amounts as a trial to see how they do at your site. You can also simply hand-seed small test plots to evaluate a variety of crops for future plantings.

### IRRIGATED PASTURE AND HAYFIELD MIXES SHOULD BE DOMINATED BY:

Meadow Brome  
Thickspike Wheatgrass

### OTHER OPTIONAL GRASSES:

Intermediate Wheatgrass  
Slender Wheatgrass (slowly disappears over time)  
Pubescent Wheatgrass  
Russian Wildrye (short-lived but covers quickly)  
Orchardgrass

### DO NOT INCLUDE:

Smooth Brome (poor production and quality, spreads aggressively)  
Kentucky Bluegrass  
Timothy

### OTHER OPTIONAL FORAGE PLANTS:

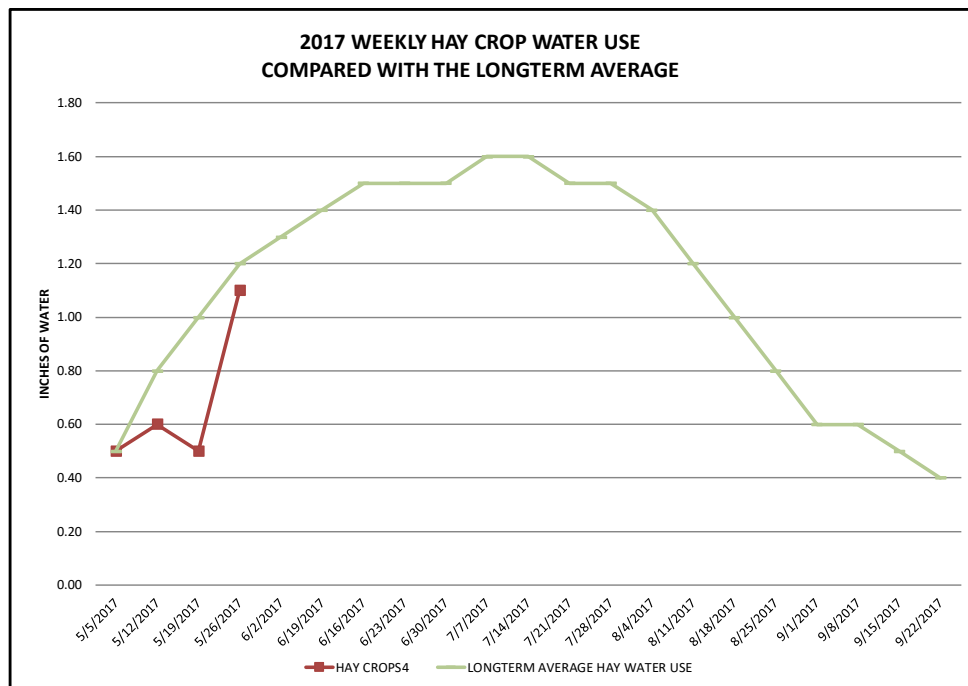
Alfalfa  
Clover (many choices)  
Peas  
Milkvetch  
Sanfoil (disappears over time)  
Collard Greens  
Turnips  
Radishes  
Phacelia  
Forage Kale  
Sunflower

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	1.20	0.80
6/2/2017								1.30	1.30	0.90
6/19/2017								1.40	1.50	1.00
6/16/2017								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>2.77</b>	<b>3.40</b>	<b>3.30</b>	<b>0.60</b>	<b>0.50</b>	<b>4.00</b>	<b>3.60</b>	<b>24.80</b>	<b>31.10</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 is reduced by 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.