

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday September 10, 2021



It was another week of warm, sunny, smoky weather. Next week looks slightly cooler with a chance of a little rain. Warm weather last week resulted in about 1 inch of crop water use and it will be slightly lower next week. Soil moisture dropped by about 1 inch unless irrigated.

**Drought Response measures appear to be working to slow the downward trend in stream flows.** Blackfoot River low flows have triggered the Challenge Drought Response Plan. Participating irrigators must follow their individual Drought Response Plans to reduce water use. FWP has made call on junior water right users throughout the drainage who do not have a Drought Response Plan. Irrigators with senior water rights have also made call on junior rights across the drainage. We thank all irrigators who have reduced water use and encourage everyone to keep up this shared sacrifice until rain and cooler temperatures bring up stream flows.



### WEATHER - SUNNY, WARM AND SMOKY

It was another warm, sunny, smoky week with temperatures that reached 90 over much of the drainage. No rain at all this week has again focused concern on river flows. Predictions of significant rainfall tonight (Friday) have fizzled into a maybe. No rain is forecast the rest of the week but temperatures should be much cooler with highs in the 70s and lows in the 30s. The 30-day forecast says below average rainfall and above average temperatures. The 90-day forecast says average rainfall and above average temperatures. You can check

smoke and air quality conditions anytime at: [airnow.gov](http://airnow.gov). The *Smoke and Fire Map* (at left) shows the fires, smoke plumes and air quality in green, yellow and red.

### CROP WATER USE - ABOVE AVERAGE WITH WARM, DRY WEATHER

This past week crop water use was above average due to warm temperatures and no rain. **Most crops used about 1 inch of water but will use less next week with cooler temperatures.** The table below provides a quick summary of crop water use this last week and an estimate for next week.

<b>WATER USE IN INCHES</b>	<b>LAST 7 DAYS</b>	<b>NEXT 7 DAYS TOTAL<sup>1</sup></b>	<b>NEXT 7 DAYS DAILY AVE<sup>2</sup></b>	<b>SEASON TOTAL<sup>3</sup></b>
<b>HAY CROPS</b>	<b>1.2</b>	<b>0.9</b>	.13	25.0
<b>PASTURE</b>	<b>0.9</b>	<b>0.7</b>	.10	20.9
<b>SPRING GRAINS</b>	<b>0.2</b>	<b>0.0</b>	.00	22.0
<b>WINTER WHEAT</b>	<b>0.0</b>	<b>0.0</b>	.00	16.0
<b>LAWNS</b>	<b>1.1</b>	<b>0.8</b>	.11	24.3

<sup>1</sup>Expected water use over the next week (range if



weather becomes cooler or hotter than expected)

<sup>2</sup>Expected average daily water use over the next week (compare this with your soil moisture conten

<sup>3</sup>Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

The table and chart below summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead. This table and chart will be updated weekly all season.

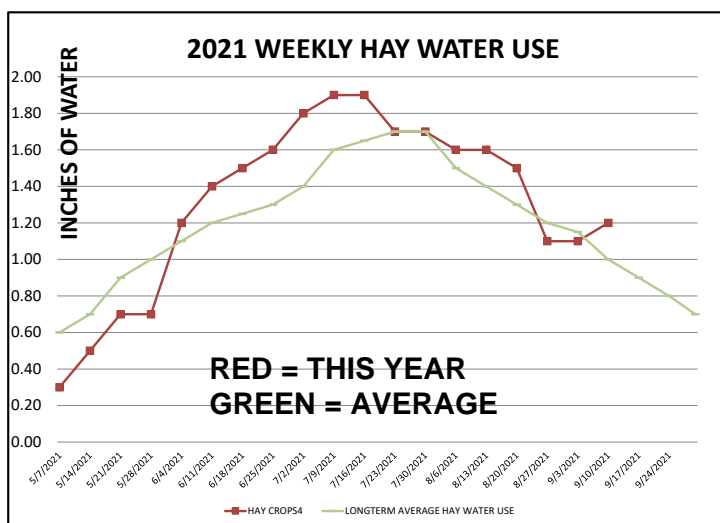
<b>BLACKFOOT 2021 GROWING SEASON WEEKLY RAINFALL &amp; CROP WATER USE (INCHES OF WATER)</b>											
WEEK ENDING	RAIN <sup>1</sup>	2021 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>			
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE	
5/7/2021	0.40	0.30	0.40	0.00	0.00	0.50	0.50	0.60	1.00	0.30	
5/14/2021	0.20	0.50	0.50	0.10	0.00	0.70	0.70	0.70	1.10	0.40	
5/21/2021	0.50	0.70	0.60	0.30	0.10	0.80	0.80	0.90	1.20	0.50	
5/28/2021	2.00	0.70	0.60	0.60	0.20	0.80	0.70	1.00	1.30	0.50	
6/4/2021	0.10	1.20	1.00	0.90	0.60	1.30	1.20	1.10	1.50	0.60	
6/11/2021	0.10	1.40	1.20	1.10	0.80	1.50	1.30	1.20	1.70	0.70	
6/18/2021	0.20	1.50	1.30	1.40	1.10	1.60	1.40	1.25	1.90	0.70	
6/25/2021	0.20	1.60	1.40	1.60	1.40	1.70	1.50	1.30	2.00	0.80	
7/2/2021	0.10	1.80	1.50	1.90	1.70	1.90	1.70	1.40	2.00	0.90	
7/9/2021	0.01	1.90	1.60	2.00	2.00	2.00	1.90	1.60	2.10	1.00	
7/16/2021	0.01	1.90	1.60	2.00	2.00	1.50	1.90	1.65	2.20	1.00	
7/23/2021	0.25	1.70	1.40	1.80	1.80	1.00	1.60	1.70	2.20	1.00	
7/30/2021	0.01	1.70	1.40	1.90	1.90	0.50	1.60	1.70	2.00	1.00	
8/6/2021	0.25	1.60	1.30	1.80	1.80	0.20	1.50	1.50	1.80	0.90	
8/13/2021	0.25	1.60	1.30	1.80	1.80	0.00	1.50	1.40	1.70	0.80	
8/20/2021	0.25	1.50	1.20	1.50	1.70	0.00	1.40	1.30	1.60	0.80	
8/27/2021	0.50	1.10	0.90	0.90	1.20	0.00	1.00	1.20	1.40	0.70	
9/3/2021	0.25	1.10	0.80	0.40	0.60	0.00	1.00	1.15	1.40	0.70	
9/10/2021	0.01	1.20	0.90	0.00	0.20	0.00	1.10	1.00	1.30	0.60	
9/17/2021								0.90	1.20	0.50	
9/24/2021								0.80	1.10	0.50	
9/30/2021								0.70	1.00	0.40	
<b>TOTAL</b>	<b>5.59</b>	<b>25.00</b>	<b>20.90</b>	<b>22.00</b>	<b>20.90</b>	<b>16.00</b>	<b>24.30</b>	<b>26.05</b>	<b>34.70</b>	<b>15.30</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) (This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

<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.

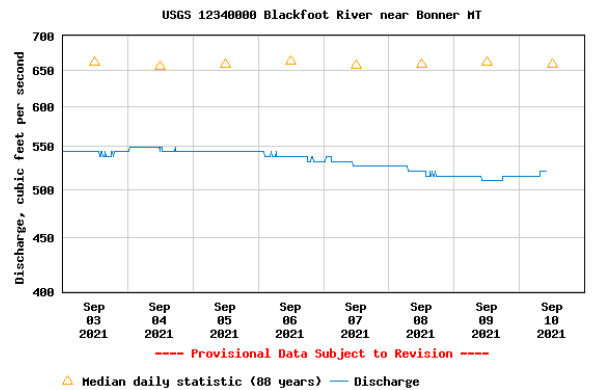
<sup>4</sup> Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



# WEEKLY TIPS

## Blackfoot Stream Flow Below 550 CFS

Today's flow was 521 CFS compared with an average of 664 CFS. The highest flow recorded on this date was 1,310 CFS in 1899 while the lowest flow was 341 CFS in 1988. **Drought Plan measures seem to have slowed the downward trend despite warmer temperatures and no rain this week.** Water temperatures remain mostly in the 50s making life slightly easier for fish. However, low stream flows simply mean fish are crowded into less space and are easier to catch.



## Follow Drought Plans, Calls on Junior Rights and Voluntary Reductions - It's Working!

All irrigators should continue to reduce water use according their **Drought Response Plans and Calls on Junior Rights**. That includes practices such as those listed below under *Drought Options*. FWP has now made call on junior water right holders that do not have a plan and those folks must stop using water.



**These activities seem to be working!** The rapid drop in stream flow seems to have slowed this week despite warmer temperatures. Irrigators across the drainage appear to have reduced water use including those with senior rights who are entitled to divert more water. The Drought Committee is optimistic that further restrictions on water use will not be needed due to voluntary cutbacks, cooler weather, predicted rain and reduced crop water needs. Call Jennifer Schoonen for details 406-360-6445.

## Drought Options - Things You Can Do Now

- Rotate Irrigation Systems During Low River Flows
- Reduce Irrigated Acreage
- Apply More Water During Each Application
- Shut off during peak afternoon heat when water just evaporates from crop leaves
- Irrigate at night and early morning if possible
- Stagger start times to alternate the area irrigated during peak afternoon heat
- Reduce or eliminate tailwater in flood systems
- Switch to pasture which uses less water compared with hayfields since animals constantly remove part of the crop (less crop leaves = less interception = less water use)

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)

# Fall Irrigation - To Water or Not to Water, That is the Question

It's that time of year again when we debate the value of fall irrigation and when to quit versus the needs to keep water in streams. Here are some of the main points.

## When Fall Irrigation Makes Sense:

- To provide fall pasture (remember pasture crops need less water during cooler weather)
- To ensure good germination and establishment of new seedings
- To help crops recover following cutting

## When Fall Irrigation Does Not Make Sense:

- When stream flows are at critical drought levels – benefits do not outweigh drought concerns
- To provide soil moisture for spring growth
- When crops have gone dormant already from lack of water
- When winterkill is a concern, especially with alfalfa

## When to Stop Irrigating to Maintain Plant Health

I encourage one irrigation after cutting hayfields to help plants overcome stress and put on some growth, especially with alfalfa. Otherwise, you can cease irrigation and plants will go into dormancy. Both grass hay and alfalfa are adapted to drought-induced dormancy and will simply start growth again when water and temperatures are favorable. Irrigation on pasture can be slowly reduced as cooler weather reduces crop water use or as drought conditions require cutbacks.

## Boosting Soil Moisture in the Fall

Our soil moisture sensor program has revealed that fall rains, winter snows and spring rains are sufficient to recharge the root zone of local cropland soils in most years. Therefore, adding more water in the fall is simply not needed.

## Storing Soil Moisture for Spring Growth

I have come to the opinion that trying to store soil moisture for next years crop is usually a waste of time for two reasons. **First**, only water stored in the lower soil (below 1 foot) is likely to still be there next May when crops start actively growing. Soil moisture in the first foot is usually lost between snowmelt and the start of active growth. **Second**, most irrigators have a difficult time boosting soil moisture below 1 foot due to the amount of water needed. You must apply enough to meet the weekly crop water use (1 inch in September, 2 in August) plus the amount to fill up the surface foot (1-2 inches) before you begin to fill up the lower soil. In very dry years, this may be a useful practice, it's just hard to predict ahead of time.

## Fall Irrigation of Alfalfa

There is much more good advice on how to irrigate alfalfa in the early and mid-season than at the end of the year. Many of the best researchers admit they don't have solid advice. However, most seem to agree that irrigating heavily up to the end of growth may not be the best practice. Alfalfa seems to need a period at the end of the season to reduce leaf growth and to store energy reserves in the root system before going dormant. Plants without sufficient root reserves may be more susceptible to winter kill or other problems.

## Do The Benefits Outweigh Drought Concerns?

Late season irrigation should always consider the potential crop benefits vs stream flows and the needs of fish and recreationists. Are the crop benefits worth the harm to fish?

## 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. Small grains harvested for seed are usually irrigated up to the milk to soft dough stage but be sure soil moisture remains to prevent kernel shriveling. Small grains for forage are often harvested earlier when plants are less dry and seeds soft.

### AUGUST - IN DROUGHT CONSIDER REDUCING OR ENDING IRRIGATION

- Apply 1 - 2 inches of irrigation per week in August to hay and pasture crops for full production depending on weather and water availability.
- 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. **Make a BC Drought Plan.**



### SEPTEMBER – APPLY AS NEEDED IF AVAILABLE & PREPARE FOR WINTER!

- Apply ½ - 1 ½ inches of irrigation per week in September to hay and pasture crops depending on weather but continue cutbacks according to your Drought Plan if necessary. Irrigate new plantings as needed. Prepare the system for winter and an early start next spring.