

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday May 15, 2020



Most Blackfoot Valley croplands had ¼ to ½ inch of rain this week (counting today) and next week should see as much or more. Crop water use was low this week (<1 inch) and should increase slightly next week. Surface soil moisture levels dropped a bit as crops began growth and irrigation systems are now running throughout the drainage. Blackfoot River flow is about average and may increase with rain this week. Water should be available early season due to above-average snowpack and average 30-day temperature/rainfall predictions. The 90-day warm/dry prediction may restrict irrigation later

We provide weekly summaries of weather, crop water use and soil moisture conditions as well as tips for irrigation, soil health and crop production. A condensed overview of suggestions for the entire irrigation season is presented on the last page of this report. Use it to look ahead and plan or to compare what you're doing now. If you would like other information please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).



WEATHER - COOL AND MOIST

This week had a mix of temperatures and a little rain. Lows were in the 30s and highs in the 40s to 50s. Next week looks warmer and wetter with lows in the 30s and 40s and highs in the 60s to low 70s. The 30-day forecast says average temperatures and rainfall. The 90-day forecast says above average temperatures and below average rainfall.

CROP WATER USE - LOW - INCREASING SLOWLY

Crop water use was low again this week except on a couple warm days. Note that at the start of the season, crop water use varies a little more across the drainage. Warmup, green-up and water use increases sooner at lower elevations and on coarser soils (sandy, rocky). Higher elevations finer soils (clay and silt) and wet areas may be a week or two behind. Crop water use both this week and next is about average at about 1 inch for established crops. The table below provides a quick summary of crop water use this last week and an estimate for next week. The table and chart on Page 2 summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead. This table and chart are updated weekly all season.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	0.8	0.9 (0.6 - 1.1)	.13	2.7
PASTURE	0.7	0.8 (0.7 - 1.0)	.11	2.5
SPRING GRAINS	0.1	0.2 (0.1 - 0.4)	.03	0.3
WINTER WHEAT	0.9	0.9 (0.8 - 1.2)	.13	2.9
LAWNS	0.9	0.9 (0.8 - 1.1)	.13	2.8

¹Expected water use over the next week (range if weather becomes cooler or hotter than expected)

²Expected average daily water use over the next week (compare this with your soil moisture content)

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

BLACKFOOT 2020 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

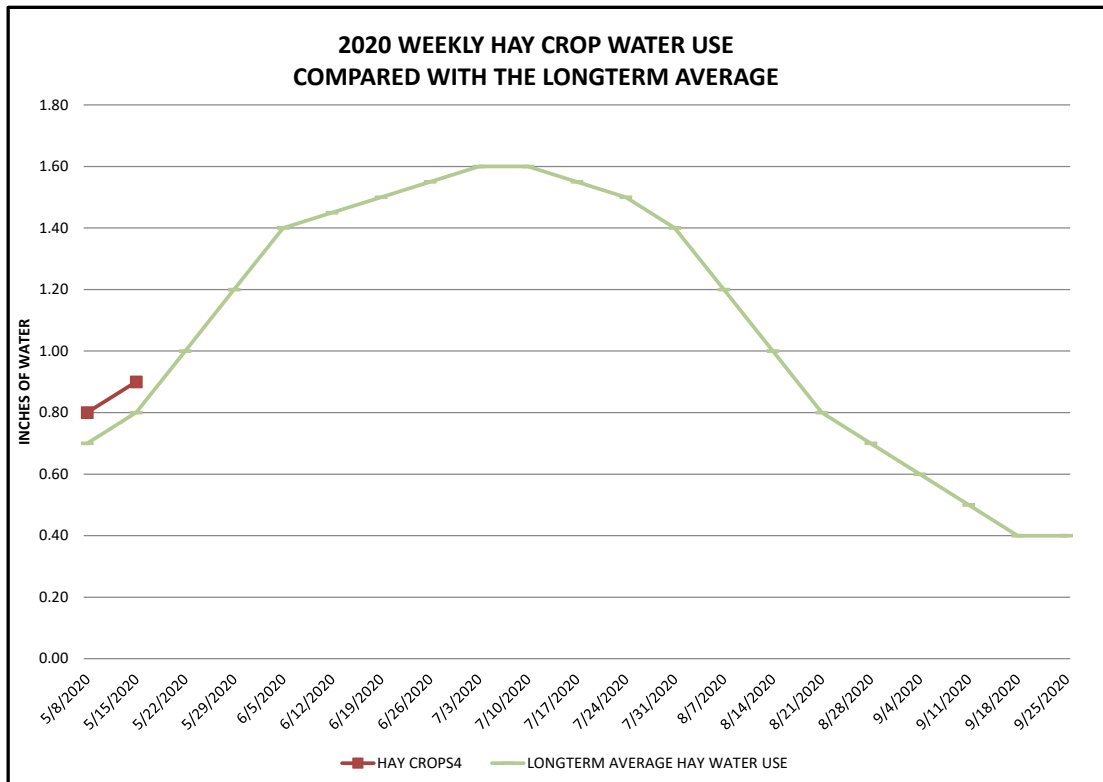
WEEK ENDING	RAIN ¹	2020 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/8/2020	0.01	0.80	0.70	0.10	0.10	0.90	0.90	0.70	1.00	0.30
5/15/2020	0.30	0.90	0.80	0.10	0.10	0.90	0.90	0.80	1.10	0.50
5/22/2020								1.00	1.20	0.60
5/29/2020								1.20	1.30	0.80
6/5/2020								1.40	1.50	1.00
6/12/2020								1.45	1.70	1.00
6/19/2020								1.50	1.90	1.10
6/26/2020								1.55	2.00	1.10
7/3/2020								1.60	2.10	1.30
7/10/2020								1.60	2.00	1.20
7/17/2020								1.55	2.00	1.20
7/24/2020								1.50	2.20	1.10
7/31/2020								1.40	2.20	1.10
8/7/2020								1.20	1.50	0.90
8/14/2020								1.00	1.30	0.70
8/21/2020								0.80	1.20	0.60
8/28/2020								0.70	1.10	0.50
9/4/2020								0.60	1.00	0.40
9/11/2020								0.50	0.90	0.40
9/18/2020								0.40	0.70	0.30
9/25/2020								0.40	0.70	0.30
TOTAL	1.56	2.70	2.50	0.30	0.30	2.90	2.80	22.85	30.60	16.40

¹ 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)

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

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

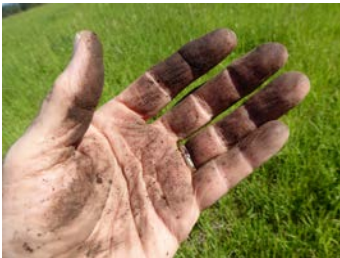
⁴ Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.





SOIL MOISTURE - MODERATE TO GOOD

Soil moisture levels throughout the drainage are generally good. Surface soils have been depleted somewhat where crop growth has been robust. Now is the easiest time to fill up surface soils that have dried in recent weeks (mostly in the lower drainage and on sandy/gravelly soils).



Soil near 100% of its water holding forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a shiny surface. Bouncing the soil in the hand usually brings water to the surface. Soil near 75% of its water holding capacity also forms a ball and leaves the hand moist but no actual water is visible on the hand or soil when bounced. Call anytime if you have questions about evaluating your soil moisture content and irrigation options.

WEEKLY TIPS

Water Supply



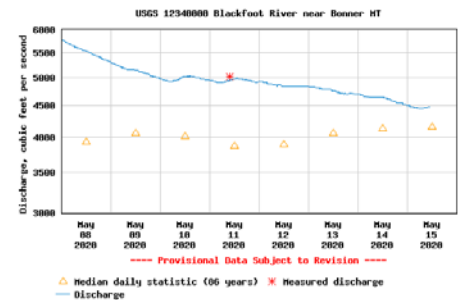
Blackfoot drainage snowpack has dropped to about average which is below last year according to the NRCS Water Supply Website:

(<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/snow/>).

Blackfoot river flows throughout May and June should remain above normal but the hot and dry weather in the long-range forecast could limit supplies in July and August.

Streamflows

The Blackfoot river flow at Bonner is about 4,500 CFS today which is slightly above average for this date (5,000 CFS) and about the same as last year. 2018 set the highest flow record at 14,500 CFS while the lowest flow on this date was 1120 CFS in 1905. Flows are increasing today as a week of rain begins. Serious flooding is not expected this year and the highest flows are likely past. Flows should maintain this week at slightly above average and continue through June at average or above.



Keep Moisture Levels High If You Can

If your soil has dried out much now is the perfect time to fill up. Most local surface soil hold 1.5 – 2 inches of water but are now only half full or less. Crops are using about an inch a week. This means you can add 1-3 inches now to “top off the tank”. At the start of a normal irrigation season we encourage filling up soils to their moisture holding capacities. Production is best if you keep the soil from falling below 50% of its water holding capacity. Remember that new seedings need monitoring to ensure the surface soil remains moist during germination and early establishment. On the other hand, there is plenty of soil moisture to keep crops going if you have other distractions this week and it will rain.

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

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- 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. Stop irrigating if you can.



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.