

BLACKFOOT CHALLENGE

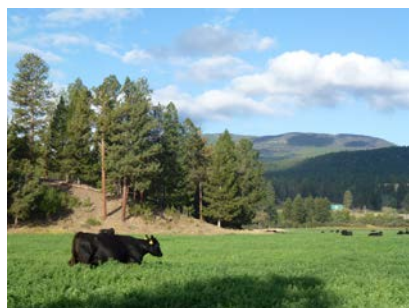
WEEKLY IRRIGATION REPORT

Friday July 17, 2020



Dry, warm weather last week and next is good news for haying. Crop water use last week was about 1 ½ inches for most crops and will increase slightly with warmer temperature next week. Water use is reduced by about 2/3 the week following cutting. Soil moisture will drop each week by the amount crops use unless there is substantial rain. Blackfoot River flows are now close to average at about 1600 CFS (Bonner) and drought conditions seem less likely this season.

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 - SUNNY AND WARM

Some Blackfoot croplands had a trace of rain last week but most had none. Next week looks dry and hotter which should be good for haying. Temperatures will be in the 80s for highs and around 50 for lows. The 30-day forecast has changed to **average temperatures** and rainfall. The 90-day forecast says above average temperatures and rainfall.

CROP WATER USE - ABOVE AVERAGE EXCEPT FOR CUT HAY CROPS

Crop water use increased this week with warmer dry weather to slightly above average. Most crops used about 1 ½ inches and will use a little more next week due to higher temperatures. Remember, water use drops by 2/3 the week after cutting and by 1/3 the following week. Try to irrigate as soon as possible after cutting if you have water. 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.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.5	1.6 (1.5 - 1.8)	.23	13.2
PASTURE	1.3	1.4 (1.3 - 1.6)	.20	11.2
SPRING GRAINS	1.8	1.9 (1.7 - 2.0)	.26	10.4
WINTER WHEAT	1.2	1.0 (0.8 - 1.1)	.14	14.0
LAWNS	1.5	1.6 (1.5 - 1.8)	.23	12.5

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)

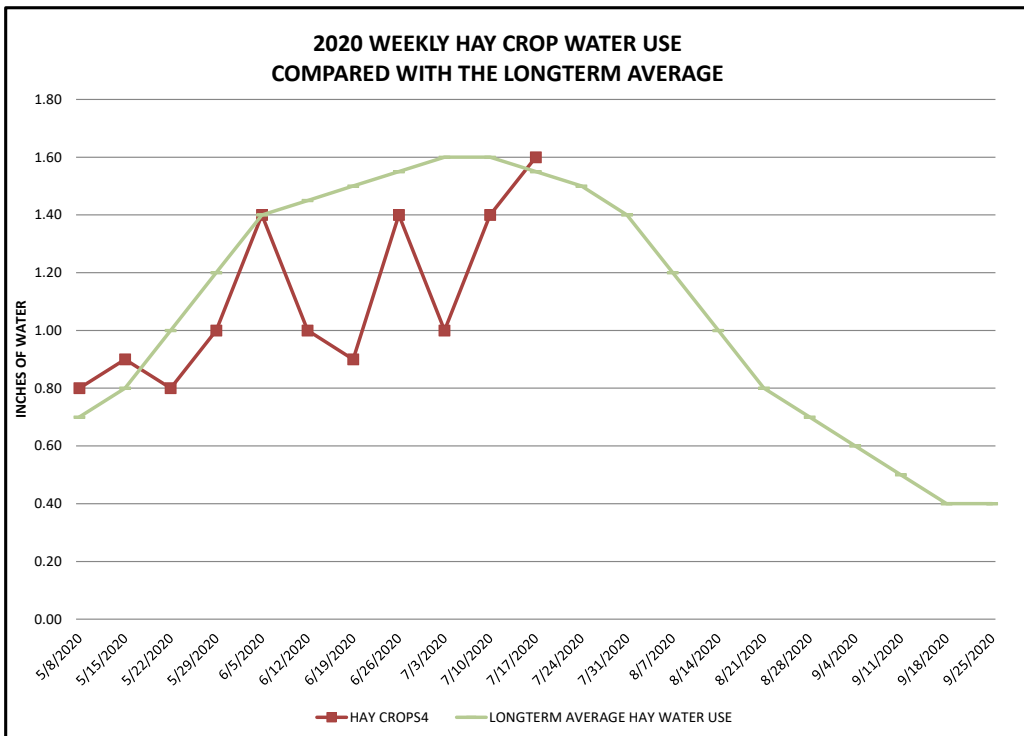
WEEK ENDING	RAIN ¹	2020 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/8/2020	0.01	0.80	0.70	0.10	0.10	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	1.25	0.80	0.70	0.30	0.20	0.80	0.80	1.00	1.20	0.60
5/29/2020	0.10	1.00	0.80	0.70	0.40	1.20	0.90	1.20	1.30	0.80
6/5/2020	1.00	1.40	1.20	1.00	0.70	1.50	1.30	1.40	1.50	1.00
6/12/2020	1.00	1.00	0.90	1.00	0.90	1.10	1.00	1.45	1.70	1.00
6/19/2020	0.25	0.90	0.70	0.90	0.90	1.00	0.80	1.50	1.90	1.10
6/26/2020	0.25	1.40	1.20	1.70	1.70	1.70	1.30	1.55	2.00	1.10
7/3/2020	1.00	1.00	0.80	1.20	1.20	1.20	0.90	1.60	2.10	1.30
7/10/2020	0.01	1.40	1.10	1.50	1.50	1.40	1.20	1.60	2.00	1.20
7/17/2020	0.01	1.60	1.30	1.80	1.80	1.20	1.50	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	6.43	13.20	11.20	10.40	9.60	14.00	12.50	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 - MOST CROPS USE ABOUT 1 ½ INCHES

Soil moisture dropped by about 1 ½ inches this week depending on crop type and will increase next week due to warmer dry weather. Crop water use decreases with cutting by 2/3 the first week and 1/3 the second week before returning to the crops full potential in the third week after cutting.



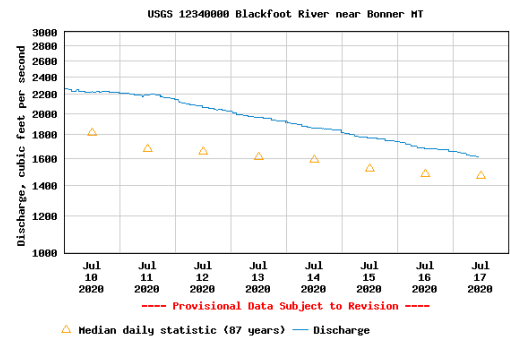
Soil near 100% of its water holding forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a shiny surface. Bouncing the soil in the hand usually brings water to the surface. Soil near 75% of its water holding capacity also forms a ball and leaves the hand moist but no actual water is visible on the hand or soil.

WEEKLY TIPS

Blackfoot River Flow About Normal



TODAY: 1,610 CFS
AVERAGE: 1,600
HIGHEST: 5,650 (1899)
LOWEST: 506 (1977)



Blackfoot River flows continued to drop this week to near normal

levels. We are still far above the 700 CFS level where irrigation restrictions begin. So far it looks like we may avoid implementing drought plans with normal temperatures and rainfall predicted for the next month.

Cheatgrass: Bane of Dog Owners and Socks (Send your suggestions!)

I've had several queries about cheatgrass control lately. My principal role with the Challenge is irrigation but I ran *Integrated Crop and Pest Management* programs for years. I consulted with Powell and Missoula county weed folks for this discussion. Karen Laitala is the official weed person for the Challenge Kllaitala@gmail.com.

Cheatgrass control is not easy requiring patience and perseverance. Without using herbicides, I have had success mapping it and then hand pulling/weed whipping/mowing before seeds form then aggressively reseeding desirable native grasses like Idaho fescue and bluebunch wheatgrass. I reseed in both spring and fall until successful. Bryce Christensen (Missoula weed supervisor) suggests using competitive grasses like slender wheatgrass either as a nurse crop or a component of the seed mix. The seed mix can include either natives or hardy non-natives like the hard fescues.

I have also had success using glyphosate (Roundup) before cheatgrass seeds form combined with aggressive re-seeding. Indazaflam and Imazapic (Plateau) are two of the most common herbicides used for cheatgrass. Rejuvra is a new herbicide just released for cheatgrass control that gets good reviews by researchers. I have not included all the label details of timing, site criteria, and other concerns. Be sure to read labels carefully before choosing and applying a product or have a detailed conversation with a weed expert. I know most of us would like to minimize herbicide use but I have had better success on numerous reclamation, restoration and weed control projects when using herbicides at the beginning. When my desired species were established, I could then control the remaining cheatgrass by hand pulling and limited spot spraying plus further reseeding.

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.