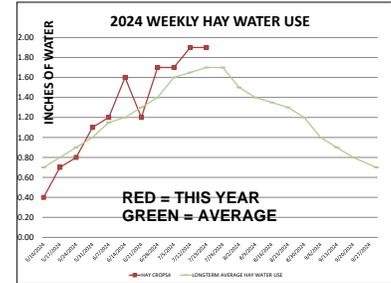


BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday July 19, 2024



Last week was HOT with no rain and next week will repeat those conditions with more smoke as another fire season begins. Crops are using water at their peak rate of the season – some approaching **1/3 inch per day and over 2 inches per week!** Next week mature crops will use about the same amount of water except cut hay. Hay water use is reduced by 2/3 the first week after cutting and 1/3 the second week. Blackfoot River flows dropped below 700 CFS last week **triggering the drought plan.** Temperatures also exceeded trigger levels and FWP has **started Hoot Owl Restrictions.** Flows may get some help as irrigators shut off for haying and drought plans are implemented. Please send us any ideas or questions to include with these reports. We will respond and share them with everyone.

WEATHER: HOT AND DRY AGAIN!

It was HOT last week and it will be HOT next week with not a drop of rain in the forecast. Keep lots of water on hand and take a break in the shade. The Greeks adopted the siesta as a society and other hot countries have followed their lead. High temps next week will be the high 90s and lows in the 50s with some locations reaching 100! Cut hay will be quick to cure. The 30-day and 90-day forecasts still predict **below average rainfall and above average temperatures.**



Your own rain gauge is your best source of rainfall information.

CROP WATER USE - HIGHEST THIS SEASON

The last two weeks saw the highest crop water use of the year and next week will be the same. Hot temperatures and no rain resulted in **most crops using about 2 inches of water.** Grains are now using about 1/3 inch per day. Remember that hay water use is reduced from its potential (below) by 2/3 the first week after cutting and 1/3 the second week. Despite a low snowpack, we had some well-timed rains and cool temperatures early in the season and first hay cuttings are looking very good.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.9	1.9	.27	14.5
PASTURE	1.6	1.6	.23	12.8
SPRING GRAINS	2.1	2.1	.30	11.1
WINTER WHEAT	2.1	2.1	.30	16.1
LAWNS	1.8	1.8	.26	14.7

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

The table on Page 1 provides a quick summary of crop water use this last week and an estimate for next week. 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.

BLACKFOOT 2024 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

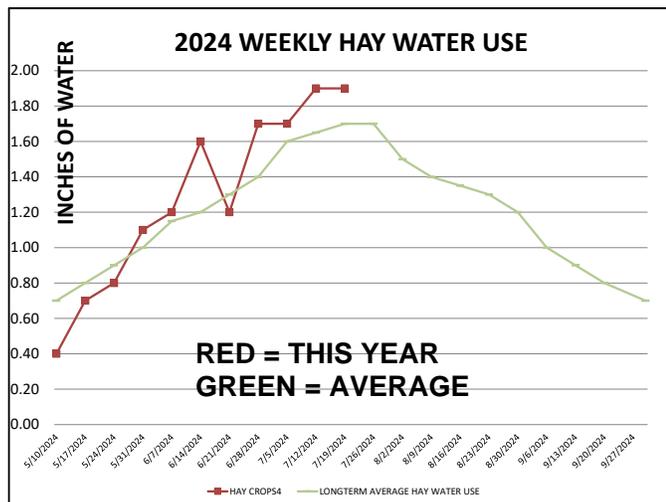
WEEK ENDING	RAIN ¹	2024 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
5/10/2024	0.50	0.40	0.50			0.50	0.60	0.70	1.00	0.40
5/17/2024	0.10	0.70	0.80			1.00	1.00	0.80	1.10	0.60
5/24/2024	1.00	0.80	0.80	0.30	0.20	0.90	0.90	0.90	1.20	0.70
5/31/2024	0.50	1.10	0.90	0.50	0.40	1.20	1.20	1.00	1.30	0.70
6/7/2024	0.10	1.20	1.00	0.70	0.50	1.30	1.20	1.15	1.50	0.80
6/14/2024	0.01	1.60	1.40	1.10	0.90	1.70	1.50	1.20	1.70	0.80
6/21/2024	0.25	1.20	1.10	1.00	0.90	1.30	1.20	1.30	1.90	0.90
6/28/2024	0.10	1.70	1.40	1.60	1.40	1.80	1.60	1.40	2.00	1.00
7/5/2024	0.01	1.70	1.40	1.70	1.70	1.90	1.60	1.60	2.10	1.10
7/12/2024	0.01	1.90	1.60	2.10	2.10	2.10	1.80	1.65	2.20	1.10
7/19/2024	0.00	1.90	1.60	2.10	2.10	2.10	1.80	1.70	2.20	1.10
7/26/2024								1.70	2.20	1.10
8/2/2024								1.50	2.20	1.00
8/9/2024								1.40	2.20	1.00
8/16/2024								1.35	2.00	0.90
8/23/2024								1.30	2.00	0.90
8/30/2024								1.20	1.80	0.90
9/6/2024								1.00	1.40	0.60
9/13/2024								0.90	1.40	0.50
9/20/2024								0.80	1.20	0.50
9/30/2024								0.70	1.00	0.40
TOTAL	2.58	14.45	12.75	11.10	10.20	16.05	14.65	25.25	35.60	17.00

¹ Average across watershed (50-80% gets to the crop depending on irrigation method, weather, evaporation from crop and soil surfaces)

² This years potential water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Varies across watershed.

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

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



HAYING LOOKS GOOD THROUGH SMOKE AND HEAT!

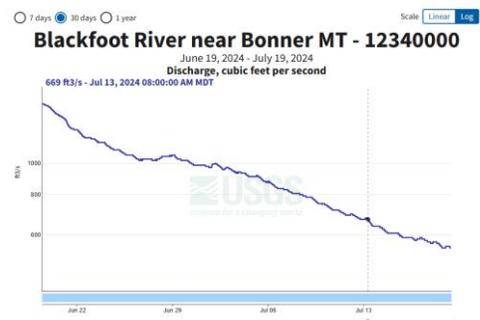
As haying continues, the crop this year looks like one of the best. Now is the difficult decision about what to do going forward. Those with junior water rights or dry streams have no choice but to stop irrigating. Those with senior rights and available water have the hardest choice. A second cutting or additional pasture is income that's not to be given up lightly. For years I have recommended irrigating once after cutting hay, especially with alfalfa. Additional irrigation will result in higher production. However, this must be weighed against historic low flows in the Blackfoot and the needs of fish and recreationists. Please reduce or cease irrigation where you can.



Remember that it takes a lot more water now to reach the crop than it did in May and June. Irrigation effectiveness drops dramatically with extremely hot temperatures. You may lose ¼ to ½ inch of water each time you irrigate and what you do apply is used up quickly. I have seen irrigators apply 3-4 inches of water after haying before showing an effect at their 8 inch soil moisture sensor. Check your irrigation closely to ensure that you are actually getting water into the soil. Those with soil moisture monitors can check their readings before and after irrigation. Others can use a shovel or soil probe.

STREAMFLOWS LOW & FALLING

Blackfoot River flows continued a sharp downward trend this week dropping to 545 CFS today. The graph at right shows the past 30 days decline which could result in record low flows later this month. Today's flow is still about 1/3 of the average for this date (1,470 CFS). The highest flow on this date was 5,020 CFS in 1899 while the lowest was 529 CFS in 1977. Haying may provide a brief respite as irrigators turn off for a short period, and some for the rest of the season. Weather predictions for the next 30 days are for above average temperatures and rainfall so streamflows will continue to drop well below average.



STREAMFLOWS AND WATER TEMPS TRIGGER DROUGHT ACTIONS

This year is the earliest in our 24 year history that we hit the drought plan trigger level of 700 CFS. That was on July 11 and beat the previous record of July 16 (2015). Blackfoot River streamflows are likely to reach the second trigger level of 500 CFS this week. Irrigators with drought plans are asked to implement their plans and prepare for even lower flows soon. FWP has begun issuing notices to junior irrigators without drought plans and Hoot Owl restrictions go into effect today on the Blackfoot River below the Cedar Meadow Fishing Access Site. When the river level drops below 500 CFS all junior water right holders in the watershed will be issued call letters telling them to cease irrigation. The U.S. Drought Monitor still puts us in the **Severe Drought** Category.

For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, 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, streamflows and drought conditions.
- 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.