BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday May 10, 2024

Welcome to the 2024 irrigation season! It was one of the least snowy winters in history and drought conditions are almost certain to dominate late summer. Anything could still happen based on rainfall, but it is unlikely that the outlook will change much. The good news is that recent cool temperatures and mixed rain/snowstorms have left soil moisture levels in good shape to start the season. The main impact of the coming drought is likely to occur later in the summer with low stream flows starting earlier and lasting longer than in recent years. Some irrigators have begun applying water, but many have waited due to cool weather and good soil moisture levels. Once again, we will provide weekly summaries of weather and crop water use along with predictions for the upcoming week. Other topics will include streamflow, drought conditions, soil health and anything else you want to talk about. Please send us any ideas or questions on these or other subjects. We will respond and share them with everyone.

WEATHER – WARMER NEXT WEEK

So far May has been cool with both rain and snow. Most cropland in the watershed had ½ to almost 1 inch of rain this week although some fell as snow. It's going to be a warm weekend and week with a little rain off and on. High temperatures with be in the 60s and 70s with lows in the 40s. The 30-day forecast says **average rainfall and temperatures.** The 90-day forecast says the below average rainfall and above average temperatures.

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

CROP WATER USE – LOW LAST WEEK AND HIGHER NEXT (WARMER)

Crop water use was low throughout April due to cool temperatures. Low crop water use continued this last week with most crops using ½ inch or less but warmer temperatures will see it increase significantly in the next few days. Note that in the early season things are more variable across Blackfoot croplands since low elevations and coarser soils warm up quicker. In these early reports, we list a range of crop water use to account for this variation. Crop water use will even out when crops start actively growing across the entire drainage.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL[1]	NEXT 7 DAYS DAILY AVE[2]	SEASON TOTAL[3]
HAY CROPS	**0.3-0.5**	**0.4-0.7**	.06-.09	0.7
PASTURE	**0.3-0.5**	**0.4-0.7**	.06-.09	0.8
SPRING GRAINS	**0.0**	**0.0**	.00-.00	0.0
WINTER WHEAT	**0.3-0.6**	**0.4-0.8**	.06-.09	0.8
LAWNS	**0.4-0.6**	**0.5-0.7**	.04-.10	0.9

[1]Expected water use over the next week (range if weather becomes cooler or hotter than expected)
[2]Expected average daily water use over the next week (compare this with your soil moisture content)
[3]Beginning 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)

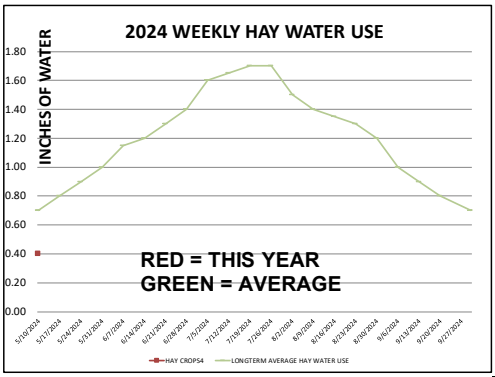
	RAIN[1]	2024 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE WEEKLY CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
5/10/2024	0.50	0.40	0.50			0.50	0.60	0.70	1.00	0.40
5/17/2024								0.80	1.10	0.60
5/24/2024								0.90	1.20	0.70
5/31/2024								1.00	1.30	0.70
6/7/2024								1.15	1.50	0.80
6/14/2024								1.20	1.70	0.80
6/21/2024								1.30	1.90	0.90
6/28/2024								1.40	2.00	1.00
7/5/2024								1.60	2.10	1.10
7/12/2024								1.65	2.20	1.10
7/19/2024								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	0.50	0.65	0.75	0.00	0.00	0.75	0.85	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.



SOIL MOISTURE – RELATIVLEY GOOD DESPITE LOW SNOWPACK!

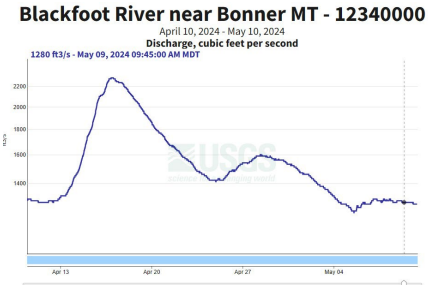
Soil moisture levels throughout the drainage this week were quite high despite the low snowpack. Moisture levels were similar to last year at about 75 - 90% of their water holding capacity throughout the 3-foot root zone. Rain/snow in the past week helped boost soil moisture and crop water use has been very low. Soil moisture will now depend on rainfall and irrigation.

WEEKLY TIPS

SNOWPACK AND WATER SUPPLY

Our Blackfoot watershed snowpack is at 57% of average compared with 81% last year. Precipitation in the Blackfoot was 76% of normal in April which compared with 88% last year. Reservoir storage is again below average but may recover a little with warmer weather predicted this week. Blackfoot river flows are predicted to be below average throughout this season with May flows predicted as 55% of average. Irrigation districts across the region have already indicated there will be less water for distribution this year. We are currently listed as in Severe Drought conditions throughout the Blackfoot watershed.

STREAMFLOW



The Blackfoot river flow at Bonner is 1.270 CFS today which is well below above average for this date (4,500 CFS). 2018 set the highest flow record at 13,100 CFS while the lowest flow on this date was 700 CFS in 1905. Weather predictions for the next 30 days are for average temperatures and average rainfall but streamflows are expected to remain well below average.

BIOCHAR PROJECT UPDATE

Last season biochar was applied to farm fields throughout the Blackfoot watershed as a demonstration project. Biochar increases water holding capacity and microbial activity which should benefit soil health and productivity. It also is one of the most promising methods to sequester carbon. Additional biochar was made available at the end of the year which was used to expand the applications and add a couple new sites. This biochar came from the Columbia Falls wood products plant which produces biochar as a biproduct from their energy recovery boiler. This extra biochar is being spread this spring and will be monitored in the future for its effects. The plots from last season already show a distinct difference (greener and taller) which may be from a combination of biochar and the compost it was combined with. We will continue to monitor the results and share them with Blackfoot irrigators.

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.
- 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.