BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday May 31, 2024

It was another week of wildly fluctuating weather from the 30s to the 80s and some rain. Next week is going to be similar. Crops continue to be confused with growth spurts on warmer days and slow growth when cold, but overall are progressing well. Despite the low snowpack, rain and cool temperatures have kept crop water use low this year and soil moisture relatively high. Streamflows got a boost from another period of rain and a day of warm temperatures. The snowpack and streamflows continue to be far below average and are unlikely to improve much this season. Once again, we will provide weekly summaries of weather and crop water use along with predictions for the upcoming week. Please send us any ideas or questions on these or other subjects. We will respond and share them with everyone.

WEATHER – COOLER AGAIN NEXT WEEK

Most local croplands had ¼ to ¾ of an inch of rain this last week with cool temperatures except for one day. Next week will start with highs in the 50s and end with highs in the 80s. Lows will start out in the 30s and end in the 40s. The 30-day forecasts say average rainfall and temperatures and the 90-day forecasts say **below average rainfall and above average temperatures.**

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

CROP WATER USE – MODERATE LAST WEEK AND NEXT

Crop water use increased slightly last week with a mix of rain and slightly warmer temperatures. Most crops used an inch of water or a bit more. Next week crop water use will be higher due to rain followed by much warmer temperatures.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL[1]	NEXT 7 DAYS DAILY AVE[2]	SEASON TOTAL[3]
HAY CROPS	**1.1**	**1.2**	.17	3.3
PASTURE	**0.9**	**1.0**	.14	3.3
SPRING GRAINS	**0.5**	**0.6**	.09	0.0
WINTER WHEAT	**1.2**	**1.3**	.19	3.9
LAWNS	**1.2**	**1.3**	.19	4.0

[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)

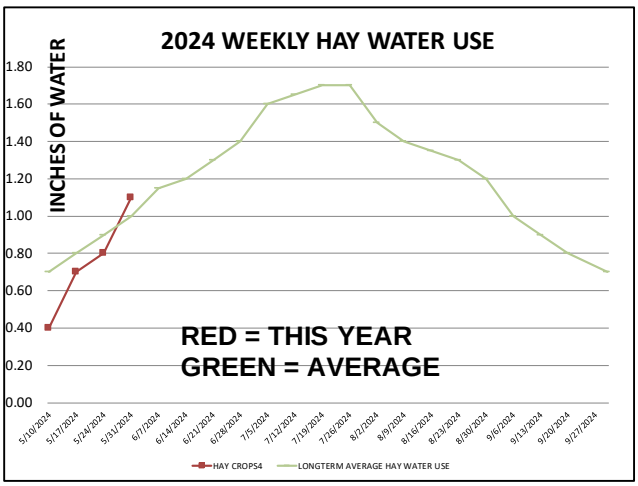
	RAIN[1]	2024 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE WEEKLY CROP WATER USE[3]		
WEEK ENDING	RAIN	HAY CROPS[4]	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
5/10/2024	0.50	0.40	0.50			0.50	0.60	0.70	1.00	0.40
5/17/2024	0.10	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								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	2.10	3.25	3.25	0.80	0.60	3.85	3.95	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.



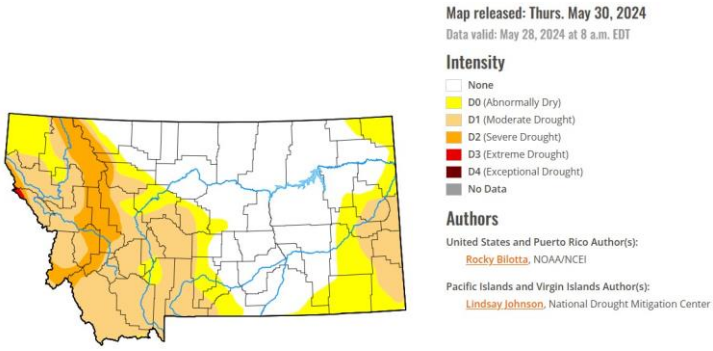
SOIL MOISTURE – DRIER WITHOUT IRRIGATION

We did not have enough rainfall last week to satisfy crop water use so soil moisture levels throughout the drainage dropped unless irrigated. Most crops showed significant growth and will really take off this week due to warmer, sunnier weather. Subsoil moisture is decreasing but still quite good in most fields. Rain is predicted early next week but will likely not be as much as crop water use so soil moisture levels will continue to drop without irrigation. Conditions for filling up your soil to its water-holding capacity will be better early next week when it's cooler and ,ore moist. June is the time to "make hay" – when your irrigation is most effective, and crops are growing fastest.

WEEKLY TIPS

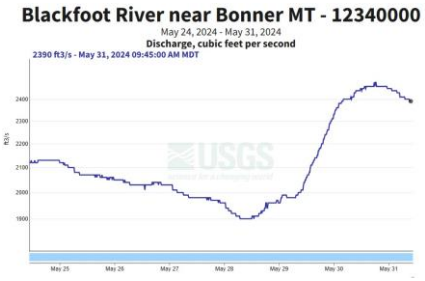
SNOWPACK AND WATER SUPPLY

This week Blackfoot watershed snowpack stations ranged from 25% of average (Copper Camp) to 62% (North Fork Elk Creek). Reservoir storage came up to 85% (Nevada Creek Reservoir). Blackfoot river flows are still predicted to be below average throughout this season. We are still listed as in *Severe Drought* conditions throughout the Blackfoot watershed (orange color on map at right).



STREAMFLOW

The Blackfoot river flow at Bonner came up with rainfall this week but not as high as the peak in mid-May. Flow at Bonner is now 2,390 CFS. This is again less than half of the average for this date (6,020 CFS). The highest flow on this date was 13,000 CFS in 1948 while the lowest flow was 1060 CFS in 1941. Weather predictions for the next 30 days are for average temperatures and rainfall so streamflows are expected to remain well below average.



WE WILL NEED MORE IRRIGATION IN THE FUTURE

Studies across the world predict a need for more irrigation to sustain agricultural production in the future. Climate change is cited as the major reason, as warmer temperatures increase crop water use. One benefit of climate change is longer growing seasons which will help the Blackfoot watershed with more crop choices and higher yields. However, while crop water use will increase, water rights will not. In areas of the world with groundwater depletion and reduced streamflows, production will fall. This has already been the case in parts of the American Midwest where the Ogallala aquifer has been drained and crop production has plummeted. The good news for Blackfoot irrigators is that we are at the top of the Columbia River watershed and up against the continental divide. We are likely to continue getting water even if the amounts decrease. We also have opportunities to increase water use efficiency as supplies become more precious.

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.