

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday July 20, 2018



Haying is in progress across the drainage and folks are smiling at mounting stacks and bulging hay sheds. Great weather this growing season was just about perfect for producing record yields with a little less effort by irrigators. Recent sunshine is predicted to continue along with hot temperatures and there is still no rain in the immediate forecast. Enjoy this perfect haying weather. If you still have water, apply one or two irrigations as soon as possible to help plants recover. Crop water use remains high for mature crops (1 ½ - 2 inches per week) but drops with hay cutting as described below. Long-range forecasts still predict above average temperatures and average rainfall for the rest of the season. Stream flows are dropping quickly. General irrigation suggestions for the entire season are presented on the last page of this report. Use these to look ahead and plan or to compare with what you're doing now. If you have questions or comment please contact Jennifer Schoonen - Blackfoot River Steward (360-6445) or Barry Dutton – Soil and Irrigation Consultant (240-7798).



WEATHER - PERFECT FOR MAKING HAY

Whether you are still growing your crop or now in the middle of haying, the weather is great. Most Blackfoot croplands had only a trace of rain this week and lots of sun. Next week will again be dominated by warm temperatures (upper 80s) and sunny skies. The 30- and 90- day forecasts still suggest above normal temperatures and normal rainfall for the remainder of the growing season.



CROP WATER USE - ABOVE AVERAGE AGAIN

Crop water use continued at above-normal levels this week due to sunny and warm weather. Crop water use will remain above normal next week as similar weather continues. Harvest is producing some great crops. Remember that water use for hay drops by 2/3 the first week after cutting and by 1/3 the second week. Crop water use returns to normal levels by the third week after cutting. The table and chart on Page 2 summarize the entire irrigation season and compare it with average, hot and cool conditions.



WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	1.6	1.6 (1.5 – 1.8)	12.6
PASTURE	1.3	1.3 (1.2 – 1.5)	10.3
SPRING GRAINS	1.9	1.9 (1.8 – 2.1)	10.3
WINTER WHEAT	1.9	1.1 (0.8 – 1.2)	13.8
LAWNS	1.5	1.5 (1.4 – 1.7)	12.0
RAIN (Average across drainage croplands)	T	T	6.2
EFFECTIVE RAIN	0	0	4.8

¹Expected water use (range if weather becomes cooler or hotter than expected)

²Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

BLACKFOOT 2018 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

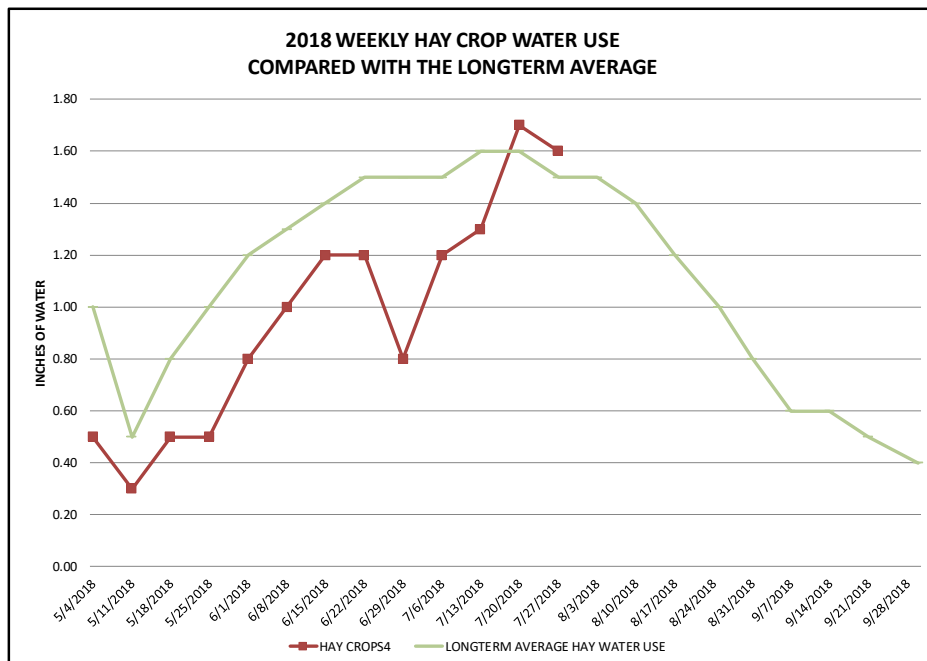
WEEK ENDING	RAIN ¹	2018 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.50	0.50	0.40	0.10	0.10	0.50	0.50	1.00	1.50	0.50
5/4/2018	0.50	0.30	0.20	0.10	0.10	0.30	0.30	0.50	0.80	0.30
5/11/2018	0.50	0.50	0.40	0.10	0.10	0.50	0.50	0.80	1.00	0.50
5/18/2018	0.50	0.50	0.40	0.10	0.10	0.50	0.50	1.00	1.10	0.60
5/25/2018	0.25	0.80	0.70	0.30	0.10	0.80	0.80	1.20	1.30	0.80
6/1/2018	0.75	1.00	0.90	0.50	0.30	1.10	1.00	1.30	1.40	0.90
6/8/2018	0.20	1.20	1.00	0.80	0.50	1.30	1.10	1.40	1.50	1.00
6/15/2018	0.50	1.20	1.00	0.90	0.70	1.30	1.10	1.50	1.70	1.00
6/22/2018	1.25	0.80	0.70	0.80	0.60	1.00	0.80	1.50	1.90	1.10
6/29/2018	0.25	1.20	1.00	1.20	0.90	1.30	1.10	1.50	2.00	1.20
7/6/2018	0.01	1.30	1.00	1.50	1.20	1.50	1.20	1.60	2.10	1.30
7/13/2018	0.01	1.70	1.30	2.00	1.80	1.80	1.60	1.60	2.00	1.20
7/20/2018	0.01	1.60	1.30	1.90	1.90	1.90	1.50	1.50	2.00	1.20
7/27/2018								1.50	2.20	1.10
8/3/2018								1.40	1.70	1.00
8/10/2018								1.20	1.50	0.90
8/17/2018								1.00	1.30	0.70
8/25/2018								0.80	1.00	0.50
8/31/2018								0.60	0.80	0.40
9/7/2018								0.60	0.70	0.30
9/14/2018								0.50	0.70	0.30
9/21/2018								0.40	0.60	0.20
9/30/2018								0.40	0.60	0.20
TOTAL	6.23	12.60	10.30	10.30	8.40	13.80	12.00	24.80	31.40	17.20

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)

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.





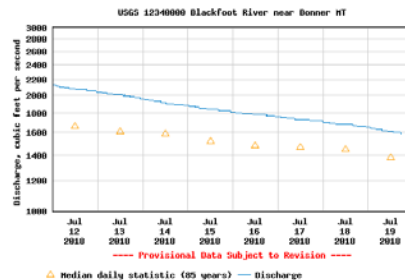
SOIL MOISTURE - RECHARGE AFTER CUTTING

Soils are drying fast due to warm, sunny conditions as mature crops remove soil moisture. Since rain is not in the forecast, soil moisture now depends on irrigation. Hay cutting stresses plants so irrigate as close to harvest as possible and then once or twice after if you have water. This is especially important for alfalfa. Another advantage to irrigating after cutting is that the crop uses less water for about two weeks so it's easier to recharge soil moisture. It's ideal to keep your soil moisture above 50% of water holding capacity for best production. At 50% of water holding capacity the soil can be formed into a ball (top photo). The hand gets dirty and appears moist (bottom photo) but not shiny wet. Call if you have questions about your soil moisture or visit the irrigation guide on the Challenge website.

WEEKLY TIPS

Streamflows and Drought (or the new normal)

Blackfoot river flows have dropped this week to about 1,600 CFS at Bonner which is near average (1,500 CFS). The highest level recorded for this date was 5,020 (1899) and the lowest 529 (1977). The hydrograph below shows a steady decline all week which will continue with the hot weather predicted over the next 10 days. The snow has melted, the rain has stopped, the sun is shining bright and its difficult to predict water supplies for the rest of the season. If it cools off and we get some rain we may avoid drought conditions but that is not the forecast. It seems that even in the "best" of years we are still going to be talking about late-season drought as the new normal.



The Challenges of Late-Season Irrigation - To Irrigate Or Not To Irrigate

Your first hay cutting is over and your grain crops are harvested. You have water available so should you turn the pumps back on or not? There are good reasons to keep irrigating – new plantings, second cuttings, cover crops or fall pasture. But it's important to recognize the challenges that come later in the season and make irrigation less effective and less profitable (mid-July to mid-September). Not everyone can turn late season irrigation dollars into a profit or benefit. Some factors of late season irrigation are:

- Less water reaches the crop since more is evaporated from crop and soil surfaces (up to ½ inch per irrigation),
- Crop water use usually peaks at about ¼ inch per day during first cutting but may hit ½ inch later on,
- There may be little profit or a net loss from late season irrigation when yields are compared with costs,
- Water availability may end any time as regulatory limits are reached or drought management plans kick in
- Other water users are focusing increased scrutiny on irrigation and late season stream flows

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.
- Stop irrigating small grains at the milk to soft dough stage but be sure there are 1- 2 inches of soil moisture left at this stage to prevent kernels from shrinking.

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.