

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday June 22, 2018

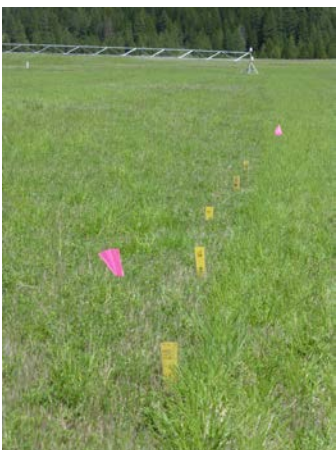


Reports are that someone up near Helmsville is building an ARK. Rain gauges continued to work hard and measure even larger storms across the drainage and the state. Another week, another 1-2 inches of rain. Some folks checked their soil moisture and stopped irrigating this week while others took advantage of cool weather to recharge soils if needed. It looks like sunshine will finally prevail next week. Crop water use was way below average at less than 1 inch but will increase rapidly with sunny weather. Long-range forecasts predict above average temperatures and below average rainfall for the rest of the season. It still looks good for late season irrigation if you have a new planting, cover crop or other project in mind. 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 - ANOTHER RAINY WEEKEND THEN SUN

I am not sure if the ARK construction spotted near Helmsville is true - the same source said the builder (a prominent local ranching patriarch) was 634 years old. But will this great moist spring end? The answer is YES – starting Monday it should be sunny for a full week. Last week saw 1-2 inches of rain fall on Blackfoot croplands. High temperatures next week should be in the 70s. The 30- and 90-day forecasts continue to suggest above normal temperatures and below normal rainfall.



CROP WATER USE - FAR BELOW NORMAL

Crop water use was way below normal this week but sunny skies next week should boost it to near normal (chart page 2). Folks will likely delay haying this year to let crops catch up and reach peak production. 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	0.8	1.3 (1.2 – 1.5)	6.8
PASTURE	0.7	1.1 (0.9 – 1.3)	5.7
SPRING GRAINS	0.8	1.1 (0.8 – 1.1)	3.7
WINTER WHEAT	1.0	1.4 (1.2 – 1.5)	7.3
LAWNS	0.8	1.2 (1.0 – 1.4)	6.6
RAIN (Average across drainage croplands)	1-2	0.25	5.7
EFFECTIVE RAIN	0.8-1.6	0.20	4.7

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)

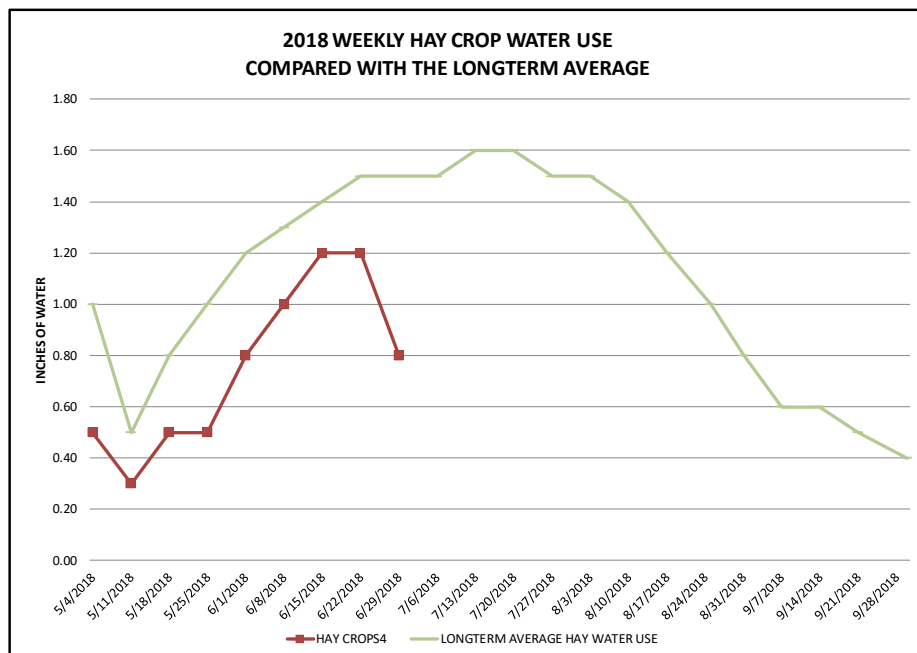
WEEK ENDING	RAIN ¹	2018 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.50	0.50	0.40	0.10	0.10	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								1.50	2.00	1.20
7/6/2018								1.60	2.10	1.30
7/13/2018								1.60	2.00	1.20
7/20/2018								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	5.95	6.80	5.70	3.70	2.60	7.30	6.60	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 - DROPPING AS CROPS TAKE OFF

Rainfall has continued to reduced the workload of many irrigators. We have had about 4.7 inches of effective rainfall so far this year. This is almost as much as some crops have used and has dramatically reduced irrigation needs on all. Irrigators have only needed to top off their soil moisture to holding capacity or go handle some other crisis. Soil moisture levels throughout the drainage continue to be much higher than normal. For the next few weeks, you will be able to gauge crop water use and how fast soil moisture drops by observing how fast crops grow. Expect rapid growth and soil moisture depletion.

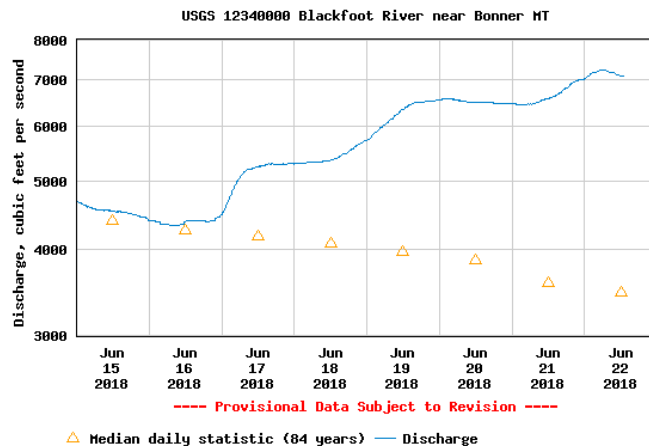
It's ideal to keep your soil moisture above 50% of water holding capacity for best production. This is a great goal for our peak production period of June when you literally make the most hay. At 50% of water holding capacity the

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

Flooding and Streamflows

Today the Blackfoot river flow is up from last week to about 7,100 CFS at Bonner compared with an average of about 4,190. The highest level recorded for this date was 14,800 (1899) and the lowest 1903 (1977). The hydrograph below shows a big reaction to last weeks storm that has only started to fall today. It should continue to fall this week if weather predictions come true.



When to Start Irrigating

There's been well-deserved debate this year about when to start irrigating and some folks have not started yet. My observations across the drainage suggest that this week is the time if you have not yet started. Soil moisture should drop quickly with warm weather this week. Remember that new plantings will get their moisture from the surface foot of soil for the first month so be sure to keep it moist. Lighter, more frequent applications are best if you have a choice. To determine if your surface soil needs irrigating just dig up a shovel full. Near water holding capacity a soil can be squeezed into a ball which maintains its shape. Also, your hand will get moist handling it and it will look dark and moist.

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.