



BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

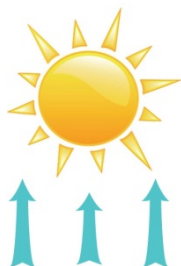
Friday September 5, 2014

The week started with a little rainfall and much cooler temperatures across Blackfoot drainage croplands. There's only a slight chance for scattered thunderstorms next week with temperatures in the 70 early in the week and 60s later. Crop water is holding at about 1 inch for hay crops due to nice weather. It has been above average for most of the season (graph on page 3). The last page of this report is a condensed summary of recommendations for the entire season.



WEATHER - SUNNY AND WARM THEN SLIGHT COOLING

Blackfoot drainage croplands received only a trace of rain last week with scattered sites reporting up to ¼ inch. Temperatures started out cooler then warmed with clear weather. Next week looks like warmer temperatures and less rainfall but cooling later in the week. The 30 and 90 day forecasts still suggest normal temperatures and above normal rainfall.



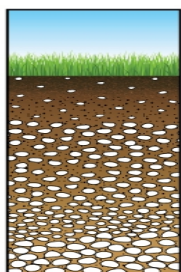
CROP WATER USE - ABOVE AVERAGE WITH WARM WEATHER

Crop water use dropped this last week due to cooler weather but remains above average for this time of year. A slow decline through September should finish the growing season. See the table and chart on Page 3 for more details.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	1.1	1.0 (0.8 - 1.1)	23.0
PASTURE	0.9	0.9 (0.8 - 1.0)	19.6
SPRING GRAINS	0.0 Mature	0.0 Mature	16.2
WINTER WHEAT	0.0 Mature	0.0 Mature	14.1
LAWNS	1.0	1.0 (0.7 - 1.1)	21.6

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

²Beginning May 1 - season start date



SOIL MOISTURE - LOW UNLESS IRRIGATED

Soil moisture levels dropped about an inch this week due to crop water use and little rainfall to make it up. Crop water use slows as soil moisture gets low.

WEEKLY TIPS

LATE FALL IRRIGATION

Questions come up each fall about the value of fall irrigation. In most cases, I suggest applying irrigation only as needed in the fall to meet crop water use. And this is only if you are still actively growing hay, pasture or new plantings.

I am not a big believer in fall irrigation as a way to store soil moisture and promote spring crop growth. It is likely that in most years any moisture stored in the surface soil will be lost to evaporation before active growth starts in the spring. Only soil moisture in the deeper soil layers will likely be preserved long enough to contribute to crop growth.

When I started my career 30 years ago it seemed that spring soil moisture levels were higher in most years. Winter snowmelt and spring rainfall seemed to fill up most cropland soils to their full moisture holding capacities on a regular basis. However, only in 1 of the past 6 years have cropland soils been at their full water holding capacities on the first of May throughout the Blackfoot drainage. May is when active growth starts across much of the drainage. There seems to be an increasingly long period between snowmelt and the start of the active growing season during which the surface soil dries out. For this reason, you will almost always need to provide irrigation to fill up the surface soil layer and promote growth in the early growing season.

So if it is easy, inexpensive, doesn't dewater a critical stream section, doesn't create other problems, then maybe there are situations where fall irrigation is at least not more effort than its value. Otherwise, give it up and take a break till next year!

BE FLEXIBLE, NEXT YEAR WILL BE TOTALLY DIFFERENT

If you think you discovered the perfect formula for irrigation or most other issues around the place, rest assured that it will be totally different next year. Last year was the drought. The year before, it snowed into June. Whatever you choose to plan for, plan to be flexible and adapt to an ever changing and more challenging world. We will continue to try and keep you informed of the latest conditions, especially the start of our every changing growing season and the need for early irrigation.

NO DROUGHT IN SIGHT - RIVER NEAR AVERAGE - DROUGHT PLANNERS RELIEVED!

Blackfoot streamflow is again slightly above average this week due to recent rainfall throughout the drainage. It looks like drought discussions will not need to come out of the closet this season and we can let those drought plans collect a season of well-deserved dust. The Blackfoot River at Bonner is flowing at about 690 CFS today which is just above the 676 average. The highest flow on this date was 1380 (1899) and the lowest flow was 328 (1988).

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

BLACKFOOT 2014 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

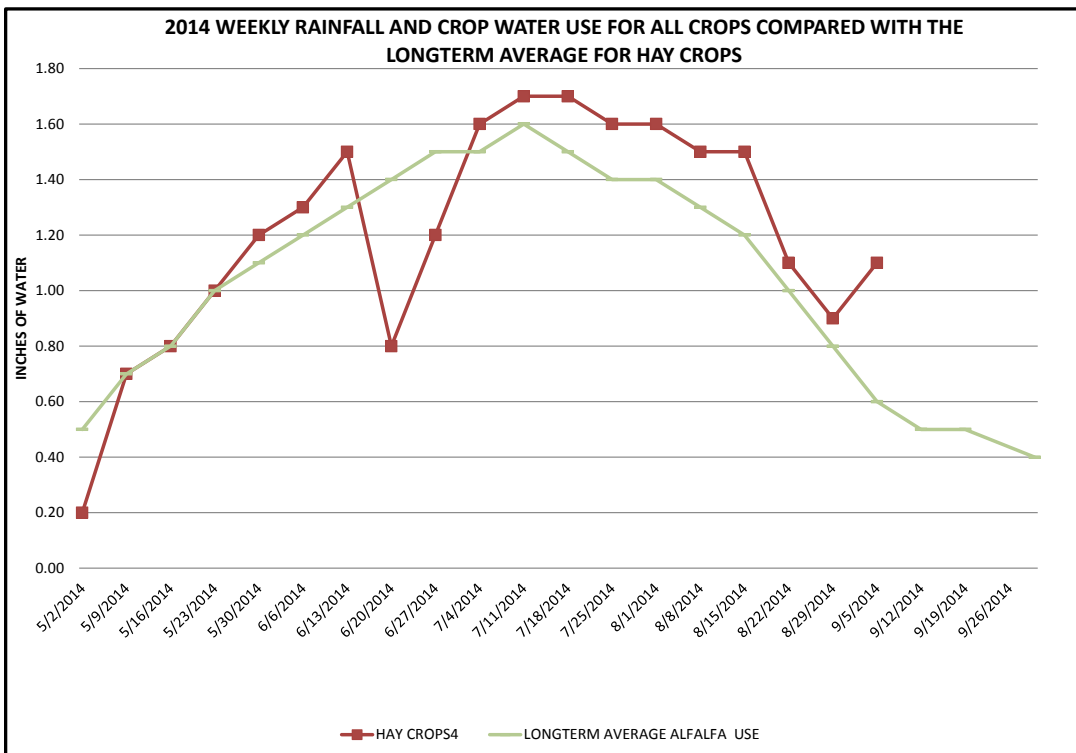
	RAIN ¹	2013 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-15 START	SPRING GRAINS 5-30 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE ALFALFA USE	HOT WEEK ALFALFA HAY WATER USE	COOL WEEK ALFALFA HAY WATER USE
5/2/2014	0.10	0.20	0.20	0.00	0.00	0.20	0.20	0.50	0.80	0.20
5/9/2014	0.50	0.70	0.60	0.00	0.00	0.80	0.70	0.70	0.90	0.30
5/16/2014	0.30	0.80	0.70	0.00	0.00	0.90	0.80	0.80	1.00	0.40
5/23/2014	0.30	1.00	0.80	0.25	0.00	1.10	0.90	1.00	1.10	0.60
5/30/2014	0.10	1.20	1.10	0.75	0.00	1.30	1.10	1.10	1.20	0.80
6/6/2014	0.10	1.30	1.20	0.90	0.30	1.40	1.20	1.20	1.30	0.90
6/13/2014	0.10	1.50	1.25	1.25	0.75	1.75	1.40	1.30	1.50	1.00
6/20/2014	1.25	0.80	0.70	0.80	0.60	0.80	0.80	1.40	1.70	1.10
6/27/2014	0.50	1.20	1.00	1.40	1.00	1.40	1.10	1.50	1.90	1.10
7/4/2014	0.10	1.60	1.40	1.75	1.50	1.50	1.50	1.50	2.00	1.20
7/11/2014	0.00	1.70	1.50	1.80	1.80	1.40	1.60	1.60	2.10	1.30
7/18/2014	0.00	1.70	1.50	2.00	2.00	0.80	1.60	1.50	2.00	1.20
7/25/2014	0.20	1.60	1.30	1.70	1.70	0.50	1.50	1.40	1.90	1.10
8/1/2014	0.10	1.60	1.40	1.50	1.50	0.25	1.50	1.40	2.20	1.10
8/8/2014	0.10	1.50	1.30	1.50	1.50	0.00	1.50	1.30	1.70	1.00
8/15/2014	0.10	1.50	1.20	0.50	0.50	0.00	1.40	1.20	1.50	0.90
8/22/2014	0.20	1.10	0.80	0.10	0.10	0.00	1.00	1.00	1.30	0.70
8/29/2014	0.50	0.90	0.70	0.00	0.00	0.00	0.80	0.80	1.00	0.50
9/5/2014	0.10	1.10	0.90	0.00	0.00	0.00	1.00	0.60	0.80	0.40
9/12/2014								0.50	0.70	0.30
9/19/2014								0.50	0.70	0.30
9/30/2014								0.40	0.60	0.20
TOTAL	4.65	23.00	19.55	16.20	13.25	14.10	21.60	23.20	29.90	16.60

¹ Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-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 Average water use for each crop each week based on historic data.

⁴ Hay Crop water use should be reduced by approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



THE BLACKFOOT DRAINAGE IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations with more detail provided throughout our irrigation guide.

APRIL – GET READY AND PLAN YOUR IRRIGATION STRATEGY!

- Get your irrigation system ready – perform maintenance and test system.
- Evaluate weather conditions and predictions then plan for 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 (May 1) 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.



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.