



BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 22, 2017

Only two weeks ago we were surrounded by fire, smothered in smoke and I lamented the September snowstorms of old. Then suddenly, we switch to below average temperatures, snow in the mountains and a sharp drop in crop water use. Temperatures will continue to be cool and crop water use low which is more typical for this time of year. The potential water use by hay crops was near ½ inch this week – less than half of two weeks ago. Blackfoot River flows are climbing rapidly and approaching average for this season. A condensed overview of the entire irrigation season is on the last page of this report so you can plan ahead. Please contact Jennifer Schoonen - Blackfoot River Steward (406-360-6445) for more information on this and other Challenge programs.



WEATHER - SLIGHTLY COOLER AND SMOKY

It was cool and rainy for the second week in a row with snow in the mountains only a few hundred feet above croplands. Most valley locations had ¼ to ½ inch of rain each of the past two weeks and cool temperatures. Similar weather is in the forecast for the next week. The 30-day forecast indicates above normal temperatures and normal rainfall. The 90-day forecast indicates both above normal temperatures and rainfall.

CROP WATER USE - HIGH - BUT NOW DROPPING

Crop water use dropped by half in the past two weeks due to cooler, wetter weather but still remains slightly above average (Chart Page 4). Most irrigation has ceased across the drainage. Irrigation continues for some hay crops and pasture where fall grazing is desired and for new crops being established. Most irrigators are rotating systems or otherwise on a reduced irrigation schedule.

WATER USE IN INCHES¹	LAST 7 DAYS	NEXT 7 DAYS²	SEASON TOTAL³	DAILY FORECAST⁴
HAY CROPS	0.6	0.6 (1.1 - 1.5)	28.2	.09
PASTURE	0.4	0.4 (0.8 - 1.2)	24.3	.07
SPRING GRAINS	0.0 (HARVESTED) 0.0 (LATE PLANTED)	0.0 (0.0 - 0.0) 0.0 (0.0 - 0.3)	15.3	.00
WINTER WHEAT	0.0 (HARVESTED)	0.0 (0.0 - 0.0)	15.3	.00
LAWNS	0.5	0.5 (0.9 - 1.3)	27.0	.08

¹Potential maximum water use for a well-irrigated crop without fertility, insect or disease restrictions

²Expected water use (range if weather becomes cooler or hotter than expected)

³April 1 – September 30 (note in 2010-13 we started our seasonal total on May 1 but now include April)

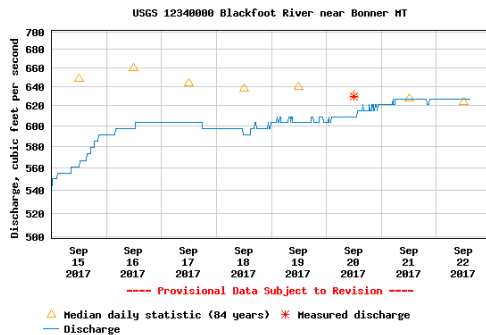
⁴Predicted average daily crop water use over the next week.

SOIL MOISTURE - STILL MOSTLY DRY BUT WILL START CREEPING UP

Most cropland soils across the drainage are very dry with little or no soil moisture. The small amount of rain we have received has penetrated little farther than the surface few inches if that. Irrigators are mostly applying water at rates that will satisfy crop water use but not build us soil moisture much.

Remember that moisture applied in the fall is unlikely to make it through until crops begin to grow again in the spring. Save your efforts and do a good job of getting out early next spring to evaluate soil moisture and fill up the soil then.

WEEKLY TIPS



STREAMFLOWS ON THE RISE FINALLY!

Blackfoot River flows are on the rise with about 625 CFS at Bonner today. The average flow for this date is about 648 CFS, the lowest about 365 CFS (1905) and the highest about 1,240 CFS (1965). More precipitation is in the forecast so conditions should continue to improve. Irrigators are still being asked to reduce or cease irrigation where possible to help fish and floaters.

START THINKING ABOUT THAT NEW SEEDING FOR NEXT YEAR!

If you are planning a new seeding you should put more thought into the expanding choices provided by old options, new strains and a warmer climate. Modern seed salesmen and advisors can help you make better selections based on your specific soils, climate and operation. They can offer options to try across parts or all of the new seeding. Grass plantings can still be anchored by two or three main species but also have a half dozen others. All plantings can include a wide variety of other plants designed to address immediate soil health concerns like aeration, organic content, water holding capacity and then disappear from the stand or can also include plants meant to become a permanent part of the new stand and provide benefits long-term.

More diverse plantings - means more diverse soil organisms because each plant has its own associated micro and macro life. This increases the likelihood that beneficial soil organisms are present and doing the job you need (mobilizing nutrients for plant growth, improving aeration and water availability).

TELL US WHAT YOU THINK!

I'll be writing up my annual report in the next week and would like to hear what you think about irrigation, this weekly report, other things we should be talking about or other ways to do it. What I will talk about includes:

- A summary of weather and crop water use for another dry year
- Soil temperature data collected across the drainage this season which suggests we have more crop choices that we thought
- Soil health options for improving irrigation, and world peace

Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

BLACKFOOT 2017 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

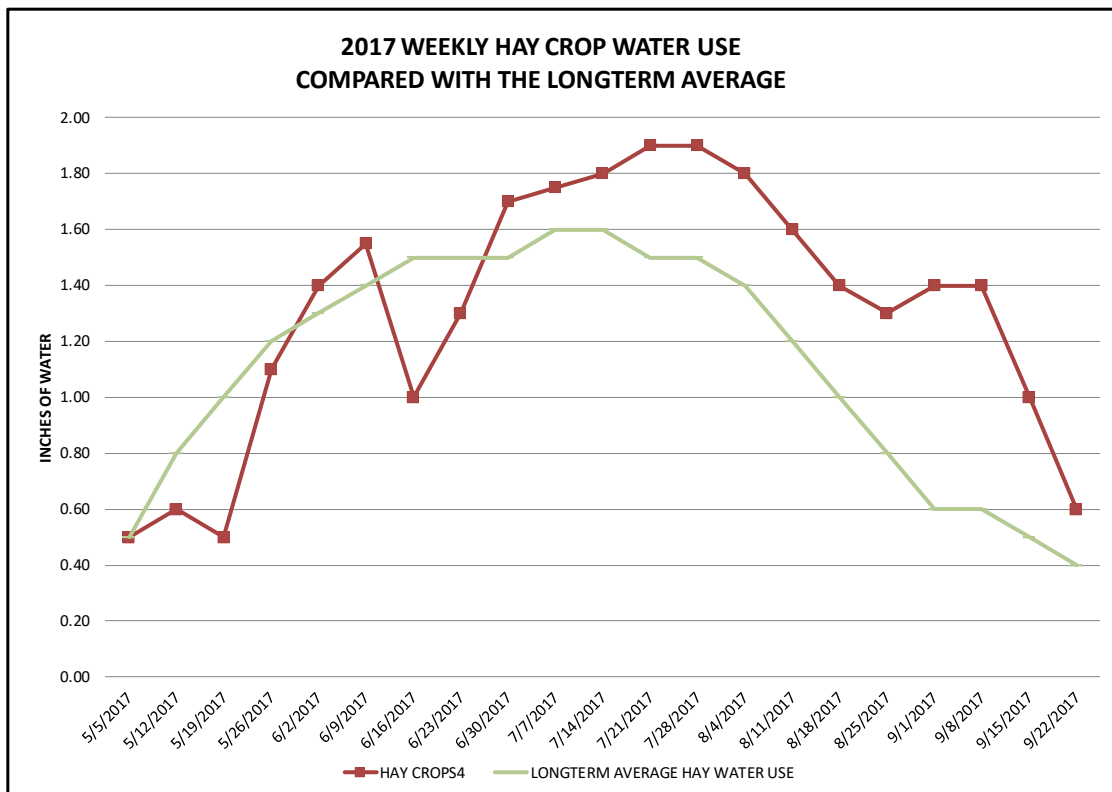
	RAIN ¹	2017 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/5/2017	0.02	0.50	0.40	0.10	0.10	0.50	0.50	0.50	0.80	0.20
5/12/2017	0.25	0.60	0.70	0.10	0.10	0.90	0.70	0.80	1.00	0.50
5/19/2017	1.00	0.50	0.60	0.10	0.10	0.60	0.50	1.00	1.10	0.60
5/26/2017	0.00	1.10	1.00	0.20	0.10	1.10	1.10	1.20	1.30	0.80
6/2/2017	0.25	1.40	1.30	0.60	0.20	1.50	1.40	1.30	1.40	0.90
6/9/2017	0.50	1.55	1.35	1.00	0.30	1.60	1.45	1.40	1.50	1.00
6/16/2017	1.50	1.00	0.90	1.20	0.60	1.20	1.00	1.50	1.70	1.00
6/23/2017	0.00	1.30	1.20	1.40	0.80	1.40	1.30	1.50	1.90	1.10
6/30/2017	0.25	1.70	1.60	1.80	1.20	1.80	1.70	1.50	2.00	1.20
7/7/2017	0.00	1.75	1.55	1.80	1.80	1.25	1.70	1.60	2.10	1.30
7/14/2017	0.00	1.80	1.60	1.90	1.90	1.00	1.75	1.60	2.00	1.20
7/21/2017	0.00	1.90	1.60	2.00	2.00	1.00	1.80	1.50	2.00	1.20
7/28/2017	0.00	1.90	1.60	2.00	2.00	0.50	1.80	1.50	2.20	1.10
8/4/2017	0.00	1.80	1.50	1.00	1.80	0.00	1.70	1.40	1.70	1.00
8/11/2017	0.00	1.60	1.20	0.00	0.50	0.00	1.40	1.20	1.50	0.90
8/18/2017	0.00	1.40	1.10	0.00	0.00	0.00	1.30	1.00	1.30	0.70
8/25/2017	0.00	1.30	1.00	0.00	0.00	0.00	1.20	0.80	1.00	0.50
9/1/2017	0.00	1.40	1.10	0.00	0.00	0.00	1.20	0.60	0.80	0.40
9/8/2017	0.00	1.40	1.20	0.00	0.00	0.00	1.30	0.60	0.70	0.30
9/15/2017	0.30	1.00	0.80	0.00	0.00	0.00	0.90	0.50	0.70	0.30
9/22/2017	0.30	0.60	0.40	0.00	0.00	0.00	0.50	0.40	0.60	0.20
9/29/2017								0.40	0.60	0.20
TOTAL	5.87	28.20	24.30	15.30	13.60	15.25	27.00	24.80	31.40	17.10

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.



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 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.