



BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday September 8, 2017

It's still pretty warm for this time of year compared with the early September snowstorms of yesteryear. Temperatures will begin to cool off slowly but with little or no rain and continued smoke. Crop water use continues to drop slowly with cooler temperatures but remains very high for this time of year. The potential water use by hay crops was near 1.4 inches this week – over twice the average. Blackfoot River flows are still below 650 CFS meaning *Drought Management Plans* remain in effect. 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 warm again this week and still smoky. No rain, snow, sleet, hail or grapple. Not much in the forecast for next week either. The smoke is coming from everywhere west, north, and south of us. Mondays satellite image shows one of the smokiest days with Ovando and Missoula marked (blue dots). See more at: <https://fsapps.nwcg.gov/afm/imagery.php?op=fire&fireID=id-mt-000>. High temperatures next week will be in the 80s. The 30-day forecast indicates above normal temperatures and below normal rainfall. The 90-day forecast indicates above normal temperatures and normal rainfall.

CROP WATER USE - HIGH - BUT NOW DROPPING

Crop water use has peaked but remains above average. Water use has ended for most small grains and other annual crops as they mature and are harvested. Irrigation water use across the drainage has dropped following harvest and since water is no longer available to many. Most irrigators are practicing deficit irrigation – applying only about half of the potential crop water use.

WATER USE IN INCHES¹	LAST 7 DAYS	NEXT 7 DAYS²	SEASON TOTAL³	DAILY FORECAST⁴
HAY CROPS	1.4	1.3 (1.1 - 1.5)	26.6	.19
PASTURE	1.2	1.1 (0.8 - 1.2)	23.1	.16
SPRING GRAINS	0.0 (HARVESTED) 0.5 (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	1.3	1.2 (0.9 - 1.3)	25.6	.17

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.

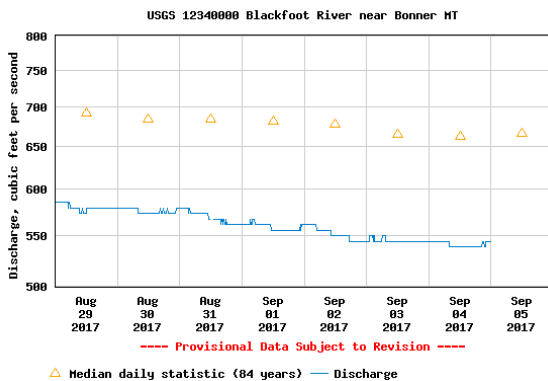
SOIL MOISTURE – NONE FOR MANY, DROPPING FOR MOST

Most cropland soils across the drainage are very dry with little or no soil moisture since there has been no rain, irrigation has ceased and crops are mostly harvested. Irrigators who are out of water now must rely on stored soil moisture. Irrigators with senior water rights and new seedings, pasture crops or aspirations of a second cutting are mostly applying only a fraction of the *potential* weekly crop water. This will not boost stored soil moisture but will help plants get through the dry period and put on some growth while we wait for fall rains. Those with clay soils and/or high organic matter content can store 6 inches in a three-foot root zone which should last 4 weeks or so before exhaustion. Those with very sandy and rocky soils have about half this amount.

WEEKLY TIPS

HOW LOW CAN YOU GET?

The Blackfoot River is now flowing about 100 CFS below the 650 CFS trigger level and **Drought Management Plans** must now be implemented. FWP is making call on junior water rights and irrigators are being asked to reduce or cease irrigation where possible. With current flow below **550 CFS** it is likely that restrictions will continue into late September. The average flow for this time of year is about **670 CFS**, the lowest about 325 CFS and the highest about 1,380 CFS. There is no significant precipitation in the forecast.



SOIL HEALTH INFORMATON - LISTSERV

We invite everyone interested in Soil Health to join the Soil Health listserv and receive announcements about this important topic. Anyone who wants to sign up can contact (jennifer@blackfootchallenge.org) or Brad (brad@blackfootchallenge.org).

THEY MAY NOT BE NEW IDEAS, BUT THEY WORK!

- *Save water for critical growth periods (crop establishment, cutting, peak growth periods);*
- Concentrate your hay efforts on the first cutting and then reduce or cease irrigation;
- Concentrate your efforts during the cooler periods when crop water use is lower;
- Reduce/stop irrigation during high crop water use periods which coincide with low stream flow;
- Rotate irrigation systems during low river flows to reduce the amount withdrawn;
- Reduce your irrigated acreage and do a good job irrigating on a smaller acreage;
- Plant crops that use less water and are harvested before low river flow periods (small grains);
- Wait to plant the next crop or new seeding until the hottest and driest period is past;
- Monitor irrigation system performance so you put on the right amount uniformly;
- Put more of your infrastructure into pipes instead of open ditches to reduce water loss;
- Talk with your neighbors and fellow water users and try to solve local problems locally;
- **Be more aware and more flexible of changing spring conditions.**
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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)

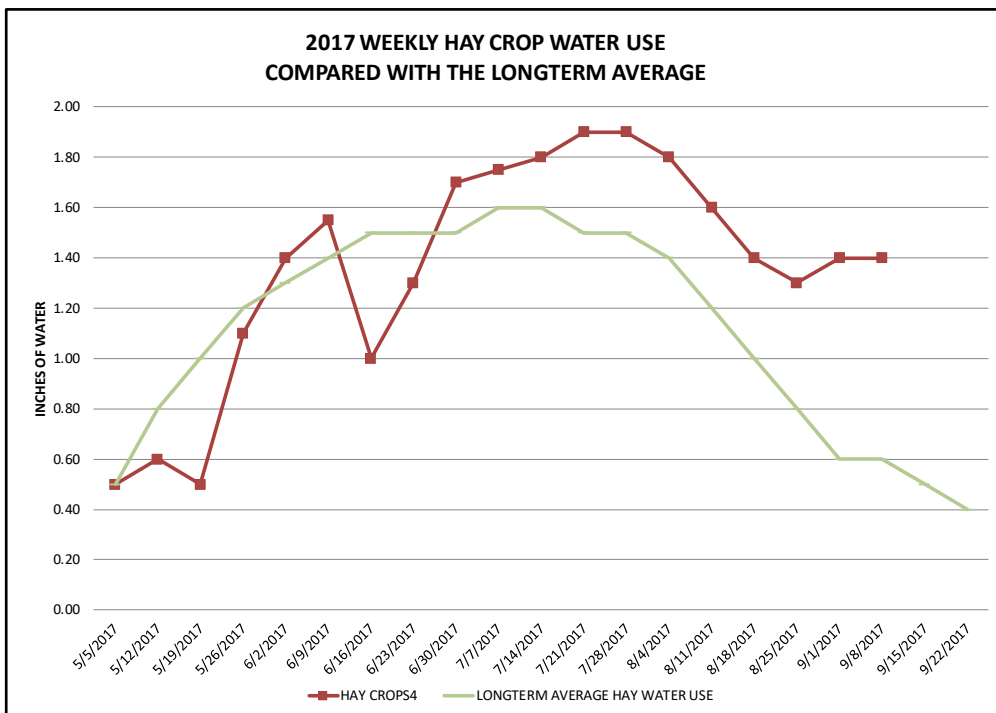
	RAIN ¹	2017 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/5/2017	0.02	0.50	0.40	0.10	0.10	0.50	0.50	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								0.50	0.70	0.30
9/22/2017								0.40	0.60	0.20
9/29/2017								0.40	0.60	0.20
TOTAL	5.27	26.60	23.10	15.30	13.60	15.25	25.60	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.