



BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

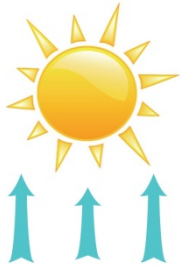
Friday August 28, 2015

Warm temperatures, wind, smoke and no rain were the theme again this last week. The weekly **potential crop water use was 1 - 1 ½ inches**. Potential crop water use will be similar next week but will cease for maturing small grain crops. Low Blackfoot River flows (420 CFS) have triggered calls on junior water rights who don't have drought management plans. Hoot Owl fishing restrictions are in effect for important and tributaries. A condensed overview of the entire irrigation season is presented on the last page of this report as a reminder to plan ahead. More information about irrigation and drought is available on the Challenge website.



WEATHER - WARM AND SMOKY

The weather this last week was warm and smoky. Similar weather with scattered thunderstorms is predicted for next week. The 30 and 90 day forecasts continue suggesting above normal temperatures and normal rainfall. See satellite fire maps at <http://activefiremaps.fs.fed.us/imagery.php>.



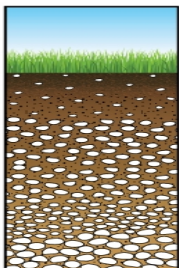
HIGH CROP WATER USE CONTINUES

Potential crop water use was again above normal this week. Most crops used about 1 ½ inches but will use less next week as temperatures cool and small grain crops mature. The table and chart on Page 3 illustrate crop water use throughout the whole season.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS¹	SEASON TOTAL²
HAY CROPS	1.4	1.3 (1.1 - 1.5)	25.0
PASTURE	1.1	1.0 (0.9 - 1.3)	21.0
SPRING GRAINS (planted May1)	0.5	0.25 (.25 - .75)	18.9
WINTER WHEAT	0.0	0.0 (0.0 - 0.25)	18.2
LAWNS	1.2	1.1 (1.0 - 1.4)	23.8

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 now include April



SOIL MOISTURE

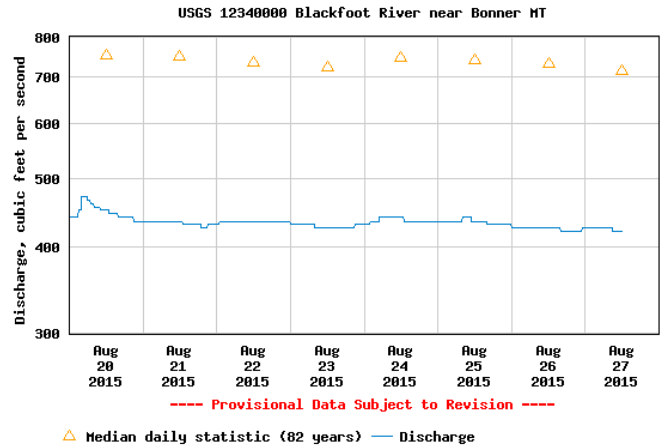
Boosting soil moisture will have to wait for fall rains for most folks. If you have water available, alfalfa is the local crop most affected by drought and light or infrequent irrigation will help keep plants alive. Cutting back on irrigation will slow hay and pasture growth but most plants will not die. Grasses are specifically adapted to drought.

WEEKLY TIPS

DROUGHT 2015

Today the Blackfoot River at Bonner is trickling at **420 CFS**. The average flow for this date is **726 CFS** and the record high flow was **1580 CFS** in 1889. The lowest flow on this date was **338 CFS** in 1988 (the year of huge fires in Yellowstone and Glacier Parks).

Irrigators with water rights junior to Murphy Rights have received call letters if they do not have a voluntary **drought management plan**. If you are one of these irrigators you can develop a plan by contacting [Jennifer Schoonen](mailto:jennifer.schoonen@montana.gov) Blackfoot Challenge Water Steward at 406-360-6445.



July has been identified as the **HOTTEST MONTH ON RECORD** worldwide since records have been kept in the 1880s. **2015** is going to be the **HOTTEST YEAR ON RECORD** worldwide. The web site <http://www.drought.gov/drought/> shows western Montana in **Severe to Extreme** drought. If you think your dry pasture is dry, take a look at the drought images on google.

Observations across the drainage suggest that most irrigators are cutting back or not irrigating at all. Many folks with multiple systems are only operating on a limited basis. Thanks to everyone for your generosity and sacrifice.

FIRES

As smoke becomes a more common part of the growing season I get asked about the effects on crops. The worst smoke usually comes after the main crop growing period in May-Mid July. Smoke reduces the sun's intensity but not enough to affect yield dramatically. There is nothing chemically harmful in wood smoke as far as most crops are concerned. Smoke actually contains nutrients including nitrogen so there is a slight fertilizing effect.

Daily fire maps can be viewed at:

<http://activefiremaps.fs.fed.us/imagery.php?op=fire&fireID=id-mt-000&day=2007209&time=top&month=9&year=2007>

Daily smoke maps can be viewed at:

<http://viewer.smoke.airfire.org/run/standard/PNW-4km/2015081700/>

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

BLACKFOOT 2015 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

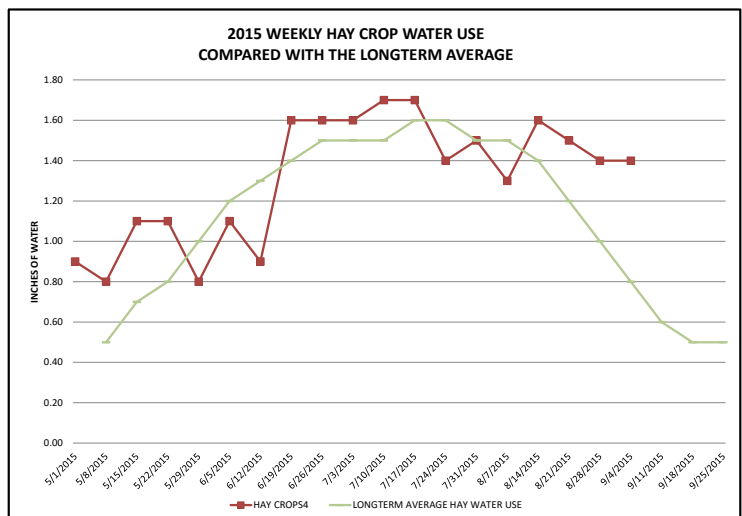
	RAIN ¹	2015 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE POTENTIAL CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
April	0.50	0.90	1.00	0.00	0.00	1.20	1.10			
5/1/2015	0.01	0.80	0.90	0.10	0.00	1.10	0.90	0.50	0.80	0.20
5/8/2015	0.01	1.10	1.00	0.20	0.00	1.20	1.10	0.70	0.90	0.30
5/15/2015	0.10	1.10	0.90	0.20	0.00	1.20	1.00	0.80	1.00	0.50
5/22/2015	0.25	0.80	0.60	0.25	0.20	0.90	0.80	1.00	1.10	0.70
5/29/2015	0.25	1.10	0.80	0.40	0.30	1.20	1.00	1.20	1.20	0.80
6/5/2015	0.50	0.90	0.80	0.50	0.40	1.00	0.90	1.30	1.30	0.90
6/12/2015	0.00	1.60	1.40	1.10	0.90	1.60	1.50	1.40	1.50	1.00
6/19/2015	0.00	1.60	1.40	1.50	1.25	1.70	1.50	1.50	1.70	1.10
6/26/2015	0.00	1.60	1.30	1.70	1.60	1.70	1.50	1.50	1.90	1.10
7/3/2015	0.00	1.70	1.40	1.80	1.80	1.80	1.60	1.50	2.00	1.20
7/10/2015	0.00	1.70	1.40	1.80	1.80	1.80	1.60	1.60	2.10	1.30
7/17/2015	0.01	1.40	1.10	1.50	1.50	1.00	1.30	1.60	2.00	1.20
7/24/2015	0.01	1.50	1.20	1.60	1.60	0.50	1.40	1.50	1.90	
7/31/2015	0.50	1.30	1.10	1.40	1.40	0.25	1.20	1.50	2.20	1.10
8/7/2015	0.01	1.60	1.30	1.70	1.70	0.00	1.50	1.40	1.70	1.00
8/14/2015	0.01	1.50	1.20	1.60	1.70	0.00	1.40	1.20	1.50	0.90
8/21/2015	0.10	1.40	1.10	1.00	1.00	0.00	1.30	1.00	1.30	0.70
8/28/2015	0.01	1.40	1.10	0.50	0.50	0.00	1.20	0.80	1.00	0.50
9/4/2015								0.60	0.80	0.40
9/11/2015								0.50	0.70	0.30
9/18/2015								0.50	0.70	0.30
9/25/2015								0.40	0.60	0.20
9/30/2015								0.40	0.60	0.20
TOTAL	2.27	25.00	21.00	18.85	17.65	18.15	23.80	24.40	30.50	15.90

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 across the drainage.
³ Average water use for each crop each week based on long-term 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.

2015 CROP WATER USE (RED LINE)

**STARTED OUT ABOVE AVERAGE,
DROPPED BELOW AVERAGE FOR 3 WEEKS,
SHOT UP ABOVE AVERAGE FOR 5 WEEKS,
BOUNCED AROUND AVERAGE THEN WENT ABOVE
AVERAGE AGAIN**

(GREEN LINE = LONG TERM AVERAGE)



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.