



BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

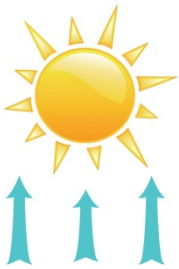
Friday Sept 11, 2015

Cooler weather significantly reduced potential crop water use this week to **under ¾ inch for all crops**. Potential crop water use should be similar or slightly higher next week. Blackfoot River flows came up for a few days and resumed a downward (though slightly recharged) trend. 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 - MUCH COOLER BUT WARMING

Croplands throughout the drainage had ¾ to 1 ½ inches of rain over the holiday weekend and much cooler temperatures. Cool temperatures and showers are predicted for this next week. The 30 day forecast suggests normal temperatures and above normal rainfall. The 90 day forecast says above normal temps and normal rainfall.



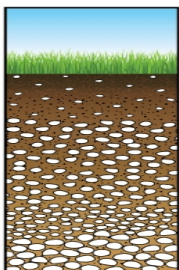
CROP WATER DECLINES WITH COOL WEATHER

Potential crop water use dropped significantly this week with cooler weather but was still above average. Most crops used ½ to ¾ inch and will use about the same or a little more next week. 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 | 0.7 | 0.8 (0.6 – 0.9) | 26.7 |
| PASTURE | 0.6 | 0.7 (0.5 – 0.8) | 22.4 |
| SPRING GRAINS (planted May1) | 0.0 | 0.0 (0.0 - 0.0) | 19.1 |
| WINTER WHEAT | 0.0 | 0.0 (0.0 - 0.0) | 18.2 |
| LAWNS | 0.7 | 0.8 (0.6 – 0.9) | 25.4 |

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 UP!

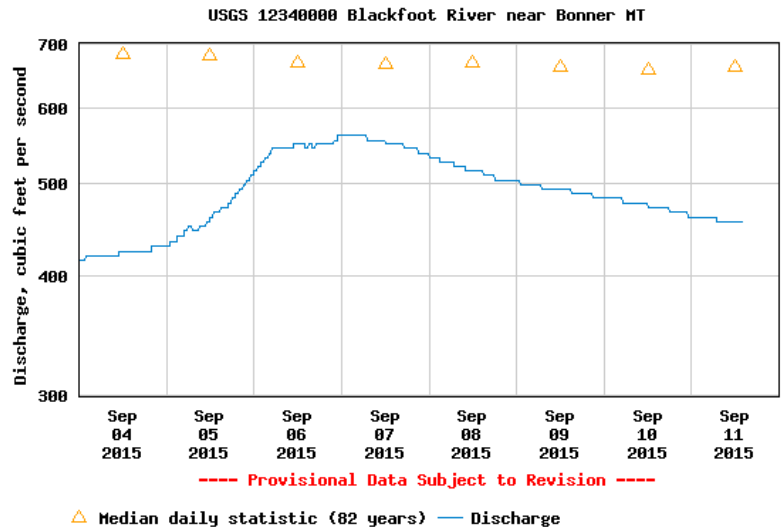
Soil moisture actually increased this week with an inch of rain and only half of that for crop water use (less where just cut or re-seeded). If you have water available, alfalfa is the local crop most affected by drought and light or infrequent irrigation will help keep plants alive.

WEEKLY TIPS

DROUGHT 2015

On Friday, the Blackfoot River at Bonner started an upward trend from near-historic low flows. However, by Monday the trend was downward once again. The smoke has also crept back. Hopefully the “showers” predicted for this week will revive the river flow and reduce the smoke.

Flow today is about 450 CFS. The average is 665 with a range of 357 to 1280 for this date.



WATER QUALITY - FOR YOU!

When I talk about water quality and agriculture it is usually another way to keep sediment out of streams. However, people are part of agriculture and deserve some consideration too! This is a reminder to think about your drinking water quality. We used to only worry about coliform, nitrate or perhaps a little Tordon or gasoline in our rural water supplies. However, a new concern has become pharmaceutical drugs that don't get broken down effectively in modern treatment plants let alone in septic tanks and drainfields. These range from hormones to cancer drugs and may have effects in extremely small amounts. They are showing up increasingly often in water quality studies. Public water supplies conduct regular testing but most rural homes have untested sources. You can't test for all risks but you can start by evaluating your risk and conducting some initial testing.

EVALUATE

You can also do your own initial risk analysis of your water supply. Common risk factors include:

- Surface water sources, springs or shallow wells;
- Sites down-gradient of septic systems (especially old ones);
- Sites with sandy/gravelly soils and/or rapid groundwater movement;
- Sites downhill or downgradient from animal confinements, feeding areas, industry, petroleum storage sites, railroads, pipelines;
- Sites downhill or downgradient from chemical storage/mixing areas;
- In general, look upstream or upgradient and decide what might come your way.

TEST

Most counties offer inexpensive water testing for coliform. You can do this as an easy first step in testing your water. A positive test may suggest other problems and prompt further testing. Your location may suggest specific tests. The web is full of water testing professionals and labs.

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 | 0.50 | 1.00 | 0.80 | 0.25 | 0.25 | 0.00 | 0.90 | 0.60 | 0.80 | 0.40 |
| 9/11/2015 | 0.50 | 0.70 | 0.60 | 0.00 | 0.00 | 0.00 | 0.70 | 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 | 3.27 | 26.70 | 22.40 | 19.10 | 17.90 | 18.15 | 25.40 | 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.

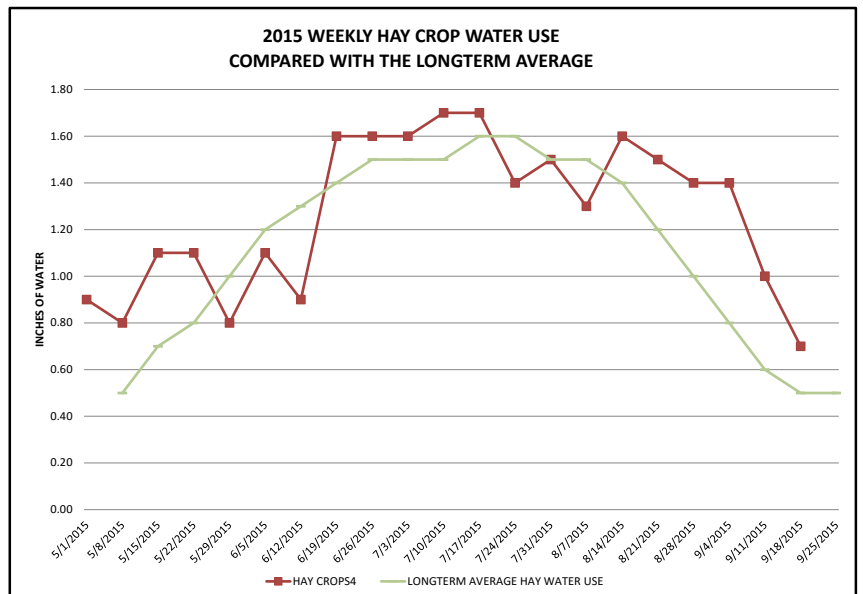
³ Average water use for each crop each week based on long-term historic data.

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.