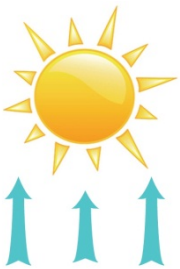
BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday June 19, 2015

Warm and dry weather kept potential **crop water use near 1 ½ inches this week** (Chart Page 3). A few drops were reported but virtually no rain fell on Blackfoot croplands. It was another challenging week to boost soil moisture but those who kept irrigating saw increases. Crops again responded well to warm temperatures and clear skies with impressive growth spurts in some fields. 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 is available on the Challenge website.

WEATHER – HOT LAST WEEK AND COOLER NEXT

The weather next week is looking a lot like the weather last week with a small chance of a shower one day and a lot of warm temperatures. Temperatures will start out in the 70s and end in the 80s with little or no rainfall. The 30 and 90 day forecasts continue to suggest above normal temperatures and normal rainfall. Low streamflows are expected to continue.

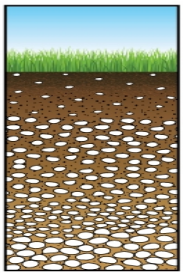


CROP WATER USE – HIGH LAST WEEK, HIGH NEXT

Crop water use shot up to about 1 ½ inches for most crops last week which is well above normal. It will decrease slightly next week with cooler temperatures and slightly higher humidity. The table and chart on Page 3 illustrate crop water use throughout the whole season.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS[1]		SEASON TOTAL[2]
HAY CROPS	**1.6**	**1.7**	(1.5 - 1.9)	9.90
PASTURE	**1.4**	**1.5**	(1.3 - 1.7)	8.80
SPRING GRAINS (planted May1)	**1.5**	**1.8**	(1.5 - 1.9)	4.25
WINTER WHEAT	**1.6**	**1.8**	(1.5 - 1.9)	11.10
LAWNS	**1.5**	**1.6**	(1.5 - 1.8)	9.80

[1]Expected water use (range if weather becomes cooler or hotter than expected)
[2]Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but now include April



SOIL MOISTURE – THE RACE TO FILL IT UP!

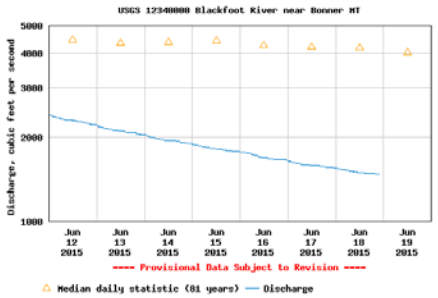
Hot temperatures, evaporation loss and high crop water use made it harder to boost soil moisture again last week but persistence paid off for those with the water and the will. It's really surprising how quickly soils dry out after irrigation and it only takes a shovel or soil probe to confirm it. So take a look and add water while it's available.

WEEKLY TIPS

Keep Irrigating While Water Supplies Last – Yes I Am Still Putting This First!

The best thing irrigators can do for their crops and basin-wide water supply is to irrigate well now and be prepared to cut back when streamflows fall to critical levels. June is the most important growth period of the season so make your best effort to irrigate well. Check your soil moisture with a soil probe or shovel and if it looks and feels moist – you're good. If it's dusty and dry – keep irrigating. This applies to both sprinkler and flood systems. Then give it a few days and look again - you will be surprised how much water a crop can use and how quickly your soil dries out!

Drought in 2015



The Blackfoot River streamflow chart at the right says it all. Flows remains at 1/3 the normal level with this trend predicted to continue throughout the summer. We are much closer to the historic low flow (1,000 cfs – 1977) than the historic high (16,900 cfs – 1899). Irrigators from California to Korea heard the same news this week. *Water Supply Forecasts* are available on the website: *http://blackfootchallenge.org/Articles/?p=1589*).

Water supplies have already dried up for some and low river flows have triggered unintended pump shutdowns for others. At this rate, drought plans could be implemented even before first cutting. Start weighing your options for a drying landscape and planning for your best choices.

To Hay or Not to Hay? Think Outside the Box?

Those with well-developed hay crops and limited water may want to cut early while water is available to irrigate after cutting. Those with water about to run out or less-mature hay crops will likely keep irrigating as long as they can before cutting. Of course, there are 137 other opinions about when to cut hay in the drainage this year so don't take my advice, just think about it. Remember that alfalfa doesn't like to get cut without a drink to recover.

Here are some hints for reducing water use taken from our irrigation guide that has more detail and is available at: http://blackfootchallenge.org/Articles/wp-content/uploads/2013/06/BFIrrigationGuideFinalv3.0.pdf

- Fill Up Your Soil - NOW - and Try to Keep it Near Full
- Know how much you apply – check with rain gauges or flow meter
- Apply More Water At Each Application
- Improve Irrigation System Performance
- Concentrate your efforts on the first cutting and then relax
- Reduce irrigated acreage and irrigate that well

Building Soil Moisture

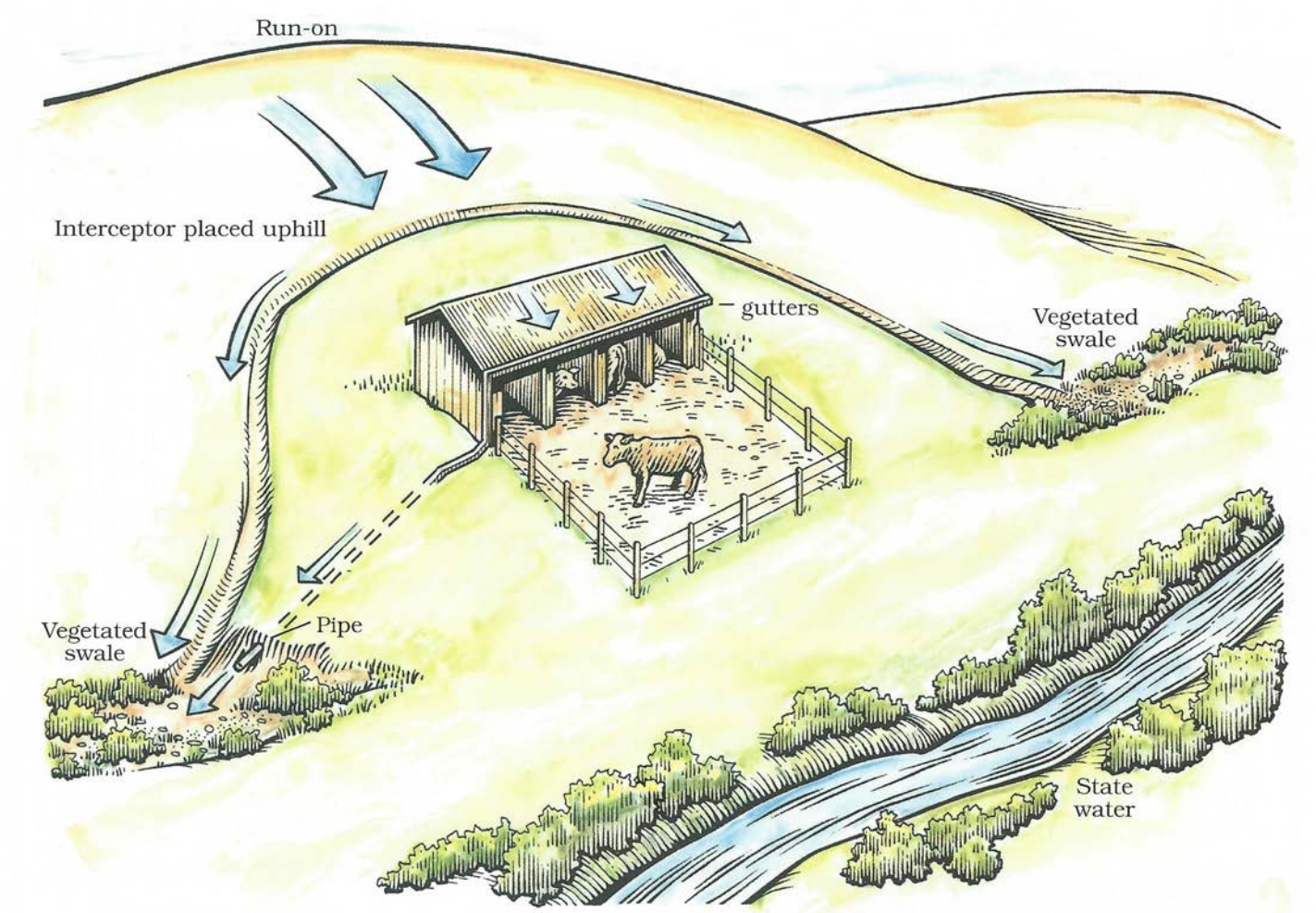
Most local soils will hold 1 - 2 inches of water per foot (less if sandy and rocky, more if clayey and silty). A three foot hay or pasture root zone can hold 3 - 6 inches. Remember to also add enough for this week's crop water use of 1 - 1 ½ inch.

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

WATER QUALITY TIPS

Controlling Run-on: Water is the carrier of many pollutants. Less water means less chance of transporting sediment and nutrients to state waters.

Many water quality problems can be reduced by reducing the amount of water entering sites with sediment and nutrients. The less water that enters, the less is available to cause erosion or pick up pollutants. This principal works whether it is a confined feeding area, corral system or flood irrigated field. Diverting **run-on waters** to well-vegetated areas is simple drainage control. The interceptor can be a swale, berm, curb, interceptor trench or simple ditch.



Examples of practical solutions for handling water entering a waste management area include clean water interceptors installed at a confinement facility to reduce run-on. At this site, clean water is diverted to a vegetated swale.

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								1.50	1.90	1.10
7/3/2015								1.50	2.00	1.20
7/10/2015								1.60	2.10	1.30
7/17/2015								1.60	2.00	1.20
7/24/2015								1.50	1.90	1.10
7/31/2015								1.50	2.20	1.10
8/7/2015								1.40	1.70	1.00
8/14/2015								1.20	1.50	0.90
8/21/2015								1.00	1.30	0.70
8/28/2015								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	**1.62**	**9.90**	**8.80**	**4.25**	**3.05**	**11.10**	**9.80**	**24.40**	**30.50**	**17.00**

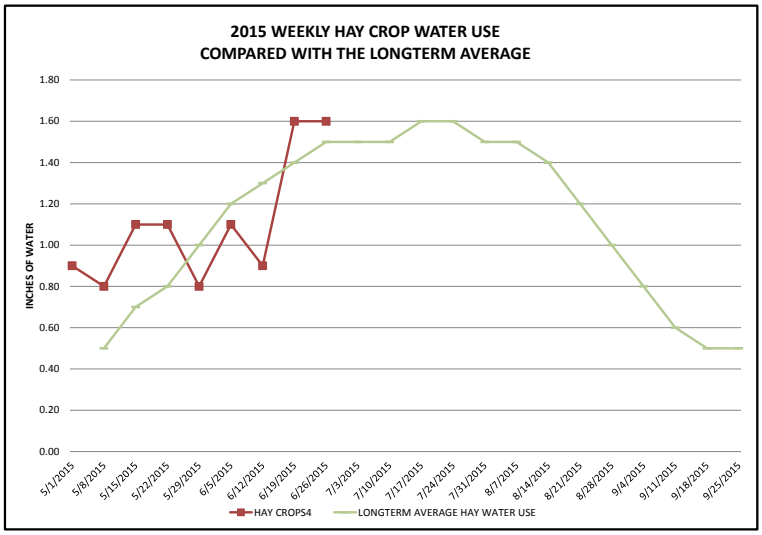
[1] Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-May and Sept, 0.15-June and August, 0.2-July)

[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.

CROP WATER USE STARTED OUT ABOVE AVERAGE, DROPPED BELOW AVERAGE FOR THREE WEEKS AND SHOT UP WITH WARMER WEATHER THE PAST TWO WEEKS (RED LINE = 2015, 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.