

## **What Can You Do with Limited Irrigation Water to Produce Forage? Some Tips and Thoughts.**

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Managing your irrigated pastures going into drought – you will want to leave 3-4 inches of stubble. This will leave carbohydrates and sugars in the crown of the plant especially when it goes dormant. This will help it possibly survive the drought and help it to regrow next spring. (Some fields forage species may not survive the drought.)

It takes 4-7 inches of water per acre to produce a dry matter ton of alfalfa or grass hay. For those with hay fields, pasturing / grazing a hay field can theoretically use less water if using best management practices irrigating, if you are grazing between 3-4 inches and 12 inches of forage compared to irrigating 2 foot plus tall hay plants. It takes (should) less water to irrigate a pasture than a hay field, if using scientific irrigation scheduling.

Make sure your soil potassium and phosphorus levels are adequate before the plants go dormant. That will help your plants to have a better chance of surviving. I know – fertilizer prices are through the roof this year to add insult to injury. You may or may not need to cut back on your nitrogen application; just make sure you will have water to utilize what nitrogen you have applied so you do not end up with anti-quality repercussions in your forage.

Those of you who have converted your overhead and MESA system pivots and linears to LESA/LEPA/MDI systems pivots and linears will get on average 15-38 % more utilization out of your irrigation water.

Those of you who have wheel lines and pods irrigation systems, check your nozzles to make sure they have not worn to a larger size, and you are applying more water than you thought (which costs you more to do that). There are cost share programs to help replace those nozzles and leaky gaskets, etc.

Follow the crop water use program Agrimet: <https://www.usbr.gov/pn/agrimet/h2ouse.html>. The program predicts daily and previous 4 days water use and predicts future one week and two week crop water use. Remember this predicts water use (evapotranspiration); you must apply more water based on the inefficiency of your irrigation system. For maximum yield, but better economic yield could be less. This will help you to not over irrigate or under irrigate.

Barley is probably the best spring cereal species to plant for those of you with really limited water to try and increase a little more forage production. Rye would be next and then maybe Triticale might be the next species to think about growing. There is an oat variety (Montezuma) that is early maturing like barley. If you think you might have close to full water, then Triticale and Wheat and oat would be best to plant. This decision would depend on your operation for internal use and / or external marketing reasons (See Spring Cereals for Forage Applied Water Use article in this newsletter.)

Teff, Millets, Grazing Corn, and Sudan/Sorghum cross forages (all warm season grasses) could be an option if you are willing to take a chance that there will be late spring and summer precipitation. BUT... that usually does Not happen in required amounts in Central Oregon, even when we are not experiencing a drought.

For those you who are in districts that might be irrigating one week on and one week or two weeks off, you might think about dividing up your irrigation sets to cover the same ground twice during the week you have water. (Think sandy-pumice, shallow-soil fields with low water holding capacity and trying to keep the plants from reaching permanent wilting point). Otherwise, from the first day of irrigation on your rotation, until you could come back to re-irrigate, it would be 13 days (with one week off) to 20 days (with two weeks off) till re-irrigation occurs on every set. You would accomplish this by reducing set times from 12 hour sets to 8- or 6-hour sets and then re-irrigating the same areas again in the same week, as an example (much more labor intensive with pod, gun, hand, and wheel lines). You would need to do the math and make sure that every area of the fields receives the same full two sets during your week of water.

Use it or lose it... Irrigate beneficially if the water is available and use it up front, which is easier accomplished, if you are lucky enough to have fields with especially deep soil (irrigate to field capacity without leaching beyond the rooting depth of the crop.)

Deficit irrigation: small grains can use 60 percent of the available water in the soil until boot stage through flowering when they will use and need 40 percent of the available soil water (leaving 60% in the soil, before the plants must be re-irrigated. At soft dough you can cut off the irrigation; if stopping at milk to soft dough stage, cut off can happen a little earlier. That is for maximum yield, which may be different from economic yield.

Alfalfa and grass hay field can utilize 50% of the available soil water, leaving 50% in the soil, and then must be re-irrigated (for maximum yield). It is a linear relationship between water applied and potential yield, without over-watering.

All forages grown under drought stress should be analyzed for nitrates! Some warm season grasses (sorghums / sudangrass) need to be also analyzed for prussic acid.

Check out this drought document: "Irrigation Water Management Strategies for Drought" by Troy Peters and Maria Zamora Re, Extension Irrigation Specialists for WSU and OSU, Respectively [http://irrigation.wsu.edu/Content/Fact-Sheets/Irrigation\\_Drought.pdf](http://irrigation.wsu.edu/Content/Fact-Sheets/Irrigation_Drought.pdf)

Check out this: "Cool-Season Perennial Grasses Differ in Tolerance to Partial-Season Irrigation Deficits". 2016 Steve Orloff, et.al. <https://alfalfa.ucdavis.edu/images/AJGrassDeficitIrrig.pdf>

In 2021, during the Jefferson County Irrigation Field Day, one of the growers commented that even with the most water use efficient irrigation system, you still need to have some water to apply, in order to grow something...