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## **LAND & LIVESTOCK**

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### **Grass Growth as affected by Timing of Precipitation**

As many of you may know, spring precipitation in Johnson and Sheridan Counties is important with regard to how much grass growth we can expect our rangeland pastures to produce. Most of our native rangeland grasses are cool-season species thus they grow during the cool time of the year – spring and fall, but do not grow well during the hot summer months. In fact once daytime temperatures exceed 85 degrees F photosynthesis of cool-season grasses shuts down and the plants go into a semi-dormant state. They remain alive but photosynthesis will be limited to only the cool times of the day – morning and evening.

Why do I bring this up? Well, I'm concerned that rangeland grass production will be sub-par this year. Thus ranchers should be making contingency plans now as to what they are going to do with their livestock in case my prediction holds true. Ranchers should always have a drought management plan in place and be ready to initiate it when it becomes evident

that a dry year is in the making, or as this year is turning out, a mistiming of precipitation.

Why do I believe rangeland grass production is going to be less than average when we have had an abundant amount of early June precipitation and for that matter had received a decent amount of moisture in March and to some degree in April? Because we did not receive much moisture in May the critical month for grass growth on the Northern Great Plains.

March precipitation for Johnson and Sheridan Counties averaged 1.9 inches, 1.1 inches greater than the long-term average (1971-2000), but March precipitation provides little moisture for plant growth because generally the soil is still frozen and thus the moisture just runs off. This runoff, however, does help to fill stock watering ponds. It is mid-April through late May precipitation that provides the necessary moisture cool-season grasses need to maximize their growth.

April precipitation for Johnson and Sheridan Counties averaged 1.2 inches, 0.4 inches below the long-term average. Now, four tenths of an inch below average is nothing to become alarmed about, especially when temperatures were cooler than normal by about five degrees. However, May precipitation averaged only 0.43 inches, two inches below the long-term average, and half of it came within the first week to ten days of the month. Thus, there was not an abundant amount of moisture for grass growth during the period most of our cool-season grasses put on the majority of their growth – mid- to late May. Cool May temperatures helped to keep the grasses green but they did not grow as much as they normally would have.

Why then with the good early June moisture we have experienced (average of 2.3 inches through the 16<sup>th</sup>) will it not be a good grass year, especially since temperatures have remained relatively cool? It has to do with the growth stage the grasses have either entered or are in the process of entering – reproductive.

Grasses will produce a significant amount of vegetation in the form of leaves if adequate moisture is present and temperatures are within their physiological tolerances – not too cold or hot. This growth stage is known as the vegetative stage and even with removal of leaf material by grazing animals the leaves will continue to grow from their base and replace the lost material. However, this continuation of leaf growth ceases once the grass transitions to the reproductive stage (stem elongation and seed head development).

Two of our native rangeland grasses have already produced stems with seed heads – Sandberg's bluegrass and prairie Junegrass. These two grasses are done growing for the year but fortunately they never produce much forage anyway. However, needle grasses

(green and needle-and-thread) and bluebunch wheatgrass are in the process of producing seed stems so additional growth from them will be limited and they are important forage producing species. In addition, rhizomatous wheatgrasses – thickspike and western – are not long in doing so, and with the recently received moisture and projected warmer temperatures this process will occur rapidly and they too will produce little additional forage.

Warm-season grasses will be the primary beneficiaries of this early June moisture with regard to leaf growth, especially if rains continue on into July and temperatures warm up to at least average. Blue grama is one of these grasses and can be found in most of our rangeland pastures on the plains. It generally does not produce seed stems until late June or early July and thus has more potential to produce additional forage but unfortunately it is generally a low forage producer in this region, although this year it might produce more than usual.

Removal of the stem by grazing or mowing could result in additional growth; especially if the area continues to receive moisture and temperatures remain below 85 F most days. The stem contains the growing point and if it is removed growth of that tiller ceases and new growth has to initiate from a basal bud in the crown of that tiller. Remember grasses consist of numerous tillers (root, crown, leaves, stem, and seed head) and only tillers whose stem has been harvested (growing point removed) will initiate new growth if environmental conditions are conducive to such but it is generally of limited amount.

Thus I encourage ranchers to be vigilant in monitoring their pastures this summer so that they do not run out of grass un-expectantly hurting their rangeland pastures and their livestock's performance.

Precipitation amounts reported above were obtained from the Community Collaborative Rain, Hail and Snow Network. You can access this information from the following: [www.cocorahs.org/state.aspx?state=wy](http://www.cocorahs.org/state.aspx?state=wy)

Long-term precipitation and temperature information was obtained from the following: [www.wrcc.dri.edu/summary/Climsmwy.html](http://www.wrcc.dri.edu/summary/Climsmwy.html)  
*Make sure you type a capital C.*

You can scroll down on the left side of the page to the Wyoming sites and click on a site to obtain climate information for that site or the map on the right side is that of Wyoming and you can click on a site within the map.

### **Irrigation Timing**

Does timing of irrigation water matter with regard to grass production? Yes, for the same reasons as discussed above. If precipitation through April is below average it would be advised to begin irrigation in early May if at all possible. For the current year it would have been wise to have begun applying water by mid-May. If irrigation was delayed until the end of May or early June most likely hay yields will be reduced. I know for some, water was not flowing through irrigation canals until the latter part of May so it was not possible to irrigate sooner.

Will applying irrigation water in mid-June be of benefit? It will depend on the grass. If the grass is smooth or meadow brome, timothy, tall fescue, or orchardgrass additional moisture, whether it be rain or from irrigation, will not result in much more, if any, additional growth. These grasses by now have transitioned to the reproductive stage so further addition of irrigation water will cost

more than what is received in additional hay yield. However, if the grasses are an intermediate or pubescent wheatgrass, mid-June irrigation might result in better hay yields, especially if late May moisture was lacking, as they are just beginning to transition to the reproductive stage.

An exception to applying irrigation water in mid-June to such grasses as the bromes is if they had been used for grazing in May and thus are still in the vegetative stage as a result. As long as daytime temperatures remain below 85 F the grasses will grow and require moisture. They eventually will transition to the reproductive stage but until then the furnishing of irrigation water is warranted.

It is advisable to not let the soil profile dry out as keeping it filled with moisture will improve regrowth potential of the grasses and increase stand longevity. However, it may be better to forego irrigation once seed heads begin to develop, especially if adequate moisture either through irrigation or precipitation was present during the vegetative and transition stages, and apply it later in the summer following hay harvests. With increasing costs for energy irrigation management is going to be all the more important in order to maintain a sustainable hay producing operation.

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