



Forage Management and Grazing Strategies during Drought

Too often, forage producers have no management plans much less a plan for forage and pasture management during a drought. The consequences of not planning for drought conditions rapidly turns into a combination of reaction and crisis management due to reduced forage production. This may be the first time many producers have exhausted their forage supply this early in the year. Even with some rain, subsoil moisture will remain short to very short. It will take several significant rainfall events to recharge the subsoil moisture deficit.

What is the outlook for summer pastures this year?

Right now, it is not good and pasture conditions are continuing to decline across much of the southern Great Plains with the continued lack of precipitation. Most of the condition of these pastures can be traced back to the conditions that occurred during the fall and winter. The key period was late-fall through winter when it was extremely dry. With the exception of a couple of significant snowfall events, there has been a minimal amount of precipitation this winter throughout much of the region. Even with the snowfall, there was no significant moisture replenishment during this period. This is the time of year when we typically store subsoil moisture for warm-season grass growth during the summer months.

What happens to forage plants during drought?

Drought rarely kills well-managed pasture plants. In most cases, drought-stressed pastures are in better condition than they appear. Most pastures can be revived with rain, rest, and fertilization. The most noticeable effect on forage plants during droughty conditions are reduced forage yields due to low soil moisture. Root growth is also limited which restricts the plant's ability to extract deeper soil moisture.

Past grazing practices will determine the extent of forage plant damage due to the drought. Overgrazing coupled with continued, severe removal of top growth results in plants with shallow root systems. Forage production dramatically decreases during a drought, and the shallow rooted plants are affected sooner and to a greater degree than the more deeply rooted ones.

A general observation from research in drier climates is that drought effects are increased when combined with other disturbances that remove plant tissues, such as fire and grazing. However, drought-stressed pastures often look worse than they appear. This can be especially true for pastures that were well managed prior to drought. In many cases pastures can be revived. The key element is rain.

What is the easiest way to reduce a current forage deficiency?

The quickest, but least pleasant way to reduce a forage deficiency is to reduce the number of animals. All breeding-aged females should pregnancy checked and sold if not pregnant. Cull any animals that in good years would be kept with reservations, such as older animals that you hope may produce “just one more calf” and cows that do not fit the herd genetics you are building, even if they are good cows.

All animals, including cows, calves, replacement animals, and bulls, should be sold if they are not doing well. During drought management we do not have the luxury to sustain non-productive or poor animals and we certainly do not want to have to feed them hay.

Are there any other options that can be considered?

First, we do not want any cows remaining in the herd to drop a lot of body condition. One consideration is to wean any fall-born calves. The calves may need to be fed to keep them from losing weight, but, if needed, they would be ready to sell. Another option for fall-born calves is to sell them early.

Other options include feeding hay until it rains and pastures become productive. However, if the drought continues for an extended period of time, it will not be economical to feed hay during the summer months. Likewise, hay supplies will be rapidly depleted during a continuing drought, which will result in widespread liquidation of livestock.

Are there any reasonable management practices to reduce forage deficiencies?

Although many are surprised by the concept, fertilization is an effective tool to manage forage deficiencies during drought. The reason is that even during periods of drought some precipitation will occur. Research has shown that one ton of non-fertilized bermudagrass requires between 15 and 20 inches of available moisture. However, bermudagrass pasture modestly fertilized with 50 lb actual N per acre, will produce approximately 1 to 1½ tons of forage with 4 to 6 inches of available moisture.

There are several approaches for pasture fertilization during drought, but the best approach is going to depend on individual producer goals and local environmental conditions. It is not too late to give up on summer pasture, but now is the time to start planning based on forage yield potential and soil test results.

For pastures with adequate soil P and soil K, two fertilization options exist. For hay production or grazing, the first option is to fertilize the pastures with the highest yield potential to maximize yield. For grazing, the second option is to apply only 50 lb N per acre across all pastures. This second option maximizes the return on each pound N fertilizer applied.

For pastures with inadequate soil P, but adequate soil K, there are also two fertilization options. For hay production or grazing, apply N fertilizer to the pastures with the highest soil P. For grazing, the second option is to apply P in pastures with the lowest soil P levels and some N fertilizer to select fields based on forage yield potential.

It is important to remember that carrying capacity of summer pastures, such as bermudagrass can be increased with N fertilization (Table 1). For short-term grazing, the first 50 pounds of N per acre appears to be the most beneficial since there is a two-fold reduction in the number of acres required to maintain one cow during the summer grazing period.

Table 1. Nitrogen and acreage required for summer grazing based on bermudagrass forage yield goal.

Production goal	Nitrogen ¹	Summer grazing (90 days)
tons/acre	lbs/acre	acres/cow
1	0	3.3
2	50	1.6
3	100	1.1
4	150	0.8

¹ Non-fertilized grass pastures will generally yield about 1 ton of forage per acre over the growing season. However, this will not be sustainable and should not be considered a long-term solution.

However, if the drought has been longer than 2 months, the wisest strategy may be to withhold fertilizer application until conditions improve. During a drought, producers may also decide to withhold P, K, and lime applications until a better year. When conditions improve, additional applications of N, plus the eliminated P and K, can always be made at a later date.

During drought, which grazing strategy, continuous stocking or rotational stocking, will be better to help stretch limited forage supplies?

Assuming that stocking rate is correct, the first consideration may be "pasture health". Some perennial grasses and some reseeding annuals will not persist if overgrazed for too long. It may be better to overstock and ruin certain pastures than to overstock and hurt all pastures. An additional advantage to using this strategy is that in the future, it would be certain which pastures which need may need better grazing management or renovation.

In short, some form of rotational stocking would offer the best chance to stretch limited pasture production. However, stocking rate is so much more important than grazing strategy that it is difficult to be certain which grazing strategy is actually better during a drought.

Summary

Fertilizing introduced pastures with a small amount of N fertilizer can also be used to offset forage deficiencies. The best approach to using this strategy is to apply 50 to 75 pounds of N to only the best grass pastures. When this is applied ahead of the primary growth forage growth period it will help stretch the forage supply by taking advantage of any rainfall that does occur. If the drought period has been from 4 to 6 weeks, producers should probably go ahead and apply 50 to 75 lbs of actual N per acre in anticipation of precipitation.

Drought reduces forage growth on both rangelands and pastures. It is important, therefore, that stocking rates be reduced at the onset of a drought to a level that will provide acceptable animal performance under the worst circumstances for the given resource base. If possible, the use of rotational stocking can improve harvest efficiency, and thus, improve forage utilization during periods of limited precipitation. During a drought, livestock cannot be allowed to patch or spot graze and waste precious forage.

During drought, stocking rates **must** be reduced on all types of forage. Fertilizer inputs are generally reduced during periods of reduced precipitation, and rotational stocking should be considered to increase harvest efficiency and forage utilization. Herbicides should not be applied during a drought because they are ineffective during dry periods. The use of prescribed fire is not recommended during drought. Finally, producers need to give careful consideration to their winter feeding program to help determine their hay production strategies during periods of drought. Hay feeding can continue into the spring for a short period, but it is not economical to feed hay during the summer. Delaying the decision to reduce stocking during a drought accelerates financial losses of the livestock production enterprise.

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