

# Extending hay resources for beef cattle during drought conditions

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One of the major hurdles that beef cattle producers face during drought conditions is limited feed resources. This often leads to feeding hay or other harvested feeds earlier than normal in order to fill the void left by decreased pasture productivity and forage abundance. To compound the issue, prolonged drought generally decreases hay availability, which often increases hay prices. As a result, extending hay resources throughout drought conditions often becomes a priority. Unfortunately there is no fix-all cure that makes the impact of drought unnoticeable. However, this publication outlines a number of management practices that should be considered in order to extend hay resources during drought conditions.

*Reducing hay waste.* Providing cattle with free-choice access to hay results in a substantial amount of hay waste. Even when fed in a round bale feeder, cattle that are given continuous access to hay will waste roughly 25 % or more of what is placed in the feeder. That means that 1 out of every 4 bales fed will never be consumed. Consider the following alternative methods of hay feeding to minimize waste.

If feeding hay in a round bale feeder, consider limiting daily hay access to a 6 to 12 hour period. If necessary, this can be done by using temporary fencing (poly-wire, etc.) to create and control access to a designated feeding area. Additionally, placing round bale feeders on a feeding pad with a solid foundation that is kept clean will also reduce hay waste.

Another means of reducing hay waste is to unroll or distribute hay on the ground. Unrolling hay on the ground can

be a very effective means of decreasing hay waste, but is only effective if done daily or on an alternate-day basis. Unrolling a week's worth of hay on the ground at a time will result in a substantial amount of waste; equal to or greater than that observed when cattle have continuous access to a round bale feeder. It is also important to ensure that cattle are not being overfed, as overfeeding will increase hay waste. Ultimately, the ability of unrolling hay to decrease waste is dependent upon the ability of the feeder to match the amount fed to the amount that the cattle will consume within a one- or two-day period.

*Limit feeding.* Another means of extending hay resources is to limit-feed cattle based upon their nutrient requirements. Nutrient requirements are dependent upon body weight, stage of production, and production goals. Limit-

feeding the amount of hay and other supplemental feeds necessary to meet nutrient requirements will almost always conserve hay or pasture resources. However this requires a more intensive level of management, and thus a greater amount of time and labor resources.

In order to limit-feed hay without sacrificing production, it is first necessary to conduct a forage analysis. Then consult with your county Extension agent or nutritionist to determine the amount of hay and supplemental feedstuffs required to meet nutrient requirements in the most economical way possible. The specific amount of each will depend upon a number of factors, and varies widely across producers. Hay will need to be fed daily when limit-fed. Supplemental feedstuffs that are high in protein and/or fiber, such as distiller's grains, corn gluten feed, cottonseed meal, soybean meal and soyhulls can be fed daily or on alternate days. Supplemental feedstuffs that are high in starch, such as corn, wheat, barley and hominy feed, need to be fed daily.

*Substitution.* Some supplemental feedstuffs have characteristics that decrease the amount of hay or pasture that are voluntarily consumed by cattle. This concept is known as substitution; where one feedstuff is voluntarily substituted by the animal for another, and thus replaces it in the animal's overall ration. Some supplemental feedstuffs that decrease voluntary hay or pasture consumption include starchy grains such as corn, barley, and wheat, as well as corn byproducts such as distiller's grains and hominy feed.

Although the amount of hay that is replaced by these supplemental feedstuffs

is dependent upon a number of factors and tends to vary, the general rule of thumb is that 1 lb of dry matter from these supplements will decrease voluntary hay intake by roughly 0.5 lbs of dry matter. For example, supplementing a mature cow with 6 lbs of shelled or cracked corn per day will decrease hay consumption by roughly 3 lbs per day. However this concept only applies to situations where hay is being fed free-choice, and not being limit-fed. Substitution rate increases as the level of supplementation increases. At high levels of supplementation, 1 lb of dry matter from one of these feedstuffs will likely replace more than 0.5 lbs of dry matter from hay. The viability of this option will ultimately depend upon the difference between supplement and hay prices, as well as hay nutrient content.

It is also important to note that not all supplements will decrease voluntary hay consumption. Some supplements that may not affect or may even increase voluntary hay consumption include corn gluten feed, soybean meal, soyhulls, and cottonseed meal. Although they may be effective sources of supplemental nutrients and may increase hay utilization, they generally do not decrease voluntary hay or pasture consumption when supplemented at low to moderate levels. Additionally, the effects of complete feeds or commodity blends on voluntary hay consumption tend to be mixed, and are generally dependent upon ingredient composition.

High levels of supplementation (> 1 % of body weight), regardless of the feedstuff, will generally decrease voluntary hay or pasture consumption. However, high levels of supplementation also tend to be costly and may be more expensive than

purchasing additional hay or other forage resources. High levels of supplementation can also lead to digestive disorders. These factors should always be considered when making supplementation decisions.

*Utilizing crop residue.* One feed resource that is far underutilized in Tennessee is crop residue. Grazing crop residue can be an effective means of maintaining cattle, particularly during drought conditions when other forage resources are limited. The nutrient content of crop residues is generally similar to that of low quality or very mature grass hay. As a result, cattle grazing crop residue will almost always need to be supplemented with additional energy and protein. In order to keep supplementation costs low, crop residues are best suited for dry cows or other cattle that have relatively low nutrient requirements. Additionally, most row-crop land in Tennessee is not fenced and may not have access to water. These are primary concerns that first need to be addressed before considering crop residue as a means of extending hay resources.

Corn residue can be an effective alternative to hay for cattle, but in a pasture- or range-based production setting will almost always be more cost effective when grazed rather than harvested and fed in bale form. Cattle graze corn stalks selectively, and tend to consume the components with the highest nutrient quality first, then move on to those with lower nutrient quality. Because of this, level of supplementation needs to increase over the duration of time that cattle spend grazing corn residue.

Soybean residue provides much less dry matter per acre than corn residue.

Because of this, it is a less effective means of reducing hay needs and requires a greater amount of supplementation. Thus, utilizing soybean residue to extend hay resources will not be a feasible option for most. Also, calves that are still nursing should never be allowed to graze soybean residue due to the risk of consuming raw soybeans that remain in the field or in the residue if it has been baled. Soybean residue should only be grazed by or fed to cattle that have been weaned for at least one month, and should never be supplemented with feeds containing urea.

Although cotton residue and gin trash can also serve as an effective means of replacing hay when supplemented with other feedstuffs, it is not approved as a legal feedstuff for beef cattle. This is due to the risk of certain chemical residues that may be present but have not been evaluated to prove that they are safe for beef cattle to consume. It is important to note that this is not only a concern for cotton, as chemical residues could also be an issue with other crop residues. Before utilizing a crop residue, always check the label for all chemicals that were applied to ensure that they are approved for use on crops that will be grazed by cattle.

*Sorting.* Consider sorting cattle into groups based upon their current stage of production. After sorting, hay and other feed resources can be more appropriately allocated to different groups of cattle based upon their nutrient requirements. Growing cattle, replacement heifers, first-calf heifers and lactating cows have greater nutrient requirements than mature dry cows and bulls. Devoting the highest quality hay resources to cattle with the greatest

nutrient requirements and lower quality hay resources to cattle with lower nutrient requirements will help to minimize the negative effects of a hay or pasture shortage on cattle performance.

Sorting cattle based upon body condition score (BCS) will also allow for hay and other feed resources to be more appropriately allocated across the herd. Over-conditioned cattle (BCS > 6) can be maintained on lower quality hay and feed resources than under-conditioned cattle (BCS < 5). Over-conditioned cattle can be maintained on crop residues or other low quality feedstuffs with minimal supplementation. This will help to conserve higher quality hay resources, which can then be more strategically used for under-conditioned cattle.

*Strategic culling.* Although the market is not always conducive to culling cattle during drought conditions, it is important to consider the added cost of purchased hay and other feedstuffs. Does the cost of maintaining older or less productive cattle justify the expense? Or are some cattle unessential to overall success of the herd? If hay or other supplemental feedstuffs can be purchased at a fairly low cost, feeding these cattle until market prices are conducive to culling may make financial sense. However, if hay and supplemental feed costs are high or supplies are scarce, marketing those cattle as soon as possible may be the best option. Decreasing the number of cattle being fed hay will help to conserve hay resources,

while the generated revenue will provide a means of purchasing the hay necessary to support the most productive cattle that need to remain in the herd.

*Overall conclusions.* Drought conditions present an opportunity to critically evaluate everyday management strategies and plan for the future. Although there is no fix-all cure, the management practices discussed in this publication should be strongly considered as means of extending hay resources during drought conditions. And while some practices may not be viable options for all producers, consider the options that could be put to use on a specific operation.

First and foremost, this will almost always include re-evaluating hay feeding methods, and feeding hay in a way that will help to minimize waste. Cattle should be supplemented as necessary, but producers should consider a supplemental feedstuff that will decrease voluntary hay consumption. If crop residues are available, they may be a viable option that will help to extend hay and other feed resources. Sort cattle into groups based upon their stage of production and body condition so that higher quality feed resources can be devoted toward the cattle that need them, and lower quality resources can be devoted to those that do not. And finally, if a specific animal is not essential to the overall success of the herd, producers are encouraged to strongly consider their removal.