

Drought Feeding Management

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Where **pasture is still plentiful**, but low in quality, the following suggestions are made concerning supplementation:

1. Provide a good mineral supplement which will maintain forage intake and efficient utilization. A complete mineral supplement containing 10 to 20% salt, 12% calcium, 12% phosphorus, 5% magnesium, 0.9% zinc, and 0.2% copper has worked well in many areas.
2. Feed one pound to two pounds per day of a high protein supplement to dry cows and possibly as much as two pound to three pounds to lactating cows to maintain forage intake and efficient utilization of the forage as well as the energy coming off the cow's back as weight loss.

Oil meal supplements such as cottonseed meal, protein blocks, and liquid supplements would be appropriate. The supplements are generally listed in order of their cattle performance effectiveness and reverse order of convenience.

3. If only dry, dormant forage is available for more than 100 to 200 days, consider supplementing or injecting vitamin A.

Where **pasture is lacking in amount as well as quality**, the following suggestions are offered:

1. If only slightly limited, the feeding of range cubes (20% protein) or mixtures of grain and cottonseed meal at rates of 3 to 5 pounds per cow daily may work for a while. Cubes with a large amount of natural protein and a low crude fiber level (less than 10%) would be preferred.
2. When **pasture becomes extremely short**, purchase of hay or a replacement feed for the pasture must be considered as well as selling of stock. Remember that most grass hay has only 50 to 65% the energy content of grain so that one pound of grain can replace 1.5 to 2.0 pounds of hay. A pound of grain will only replace 1.2 to 1.4 pounds of alfalfa hay. It doesn't make sense to pay \$105 per ton for poor quality grass hay when grain would cost very little more. It is necessary to start cows on grain slowly and feed so that all cows have opportunity for their share of the feed. It is possible to feed up to 80% grain in a maintenance diet for British bred cows, but such high levels should not be considered for Brahman cattle. All cattle need some forage in the diet to minimize digestive problems.

In the absence of sufficient nutrients, particularly energy, cows lose considerable weight. When such weight losses occur, milk production decreases and reproductive activity may cease. The end result is light-weight calves and unbred cows. To prevent such undesirable effects, cows either must be provided sufficient nutrients to avoid weight losses and maintain production requirements or they must be relieved totally or partially from body stresses.

Unavailability of feeds or their unusually high cost often prohibits feeding lactating cows the nutrients necessary for lactation and rebreeding. Production requirements of the mature cow for which nutrients are needed include body maintenance, lactation and rebreeding. First-calf heifers and young cows must have additional nutrients for growth. To reduce stress and lessen the total feed necessary, the only production requirement that can be removed is lactation. Lactation stress may be removed from cows or heifers by weaning calves after 60 to 80 days of age, or partially removed

by creep feeding and holding the calf off the cow for part of the day. In so doing, nutrient requirements are lessened and reproductive activity is more likely to commence or be maintained.

Where considering early weaning, rations such as the one in Table 1 are used to start baby dairy calves on feed and would work equally well for young beef calves. Such rations are commercially available. A high quality hay should be fed with this mixture. As calves pass 4 to 6 months of age, traditional feedlot rations containing 12 to 14% protein and 10 to 40% roughage may be self fed depending on the level of performance desired.

Where hay is scarce, give ammoniated wheat straw a try. **Ammoniation** of straw with 60 pounds of anhydrous ammonia per ton of straw will increase cattle performance and make it possible to utilize wheat straw as the only roughage in the diet, something not recommended for untreated straw.

A summary of four trials is presented in Table 2 indicating that actual daily gain was improved by ammoniation by .31 to .82 pounds daily. The improvement results because of increases in digestibility and intake, intake improving by 20 to even 30%. As indicated, 2 to 3 pounds of supplement or alfalfa hay were fed along with free choice wheat straw. Ammoniation does not make wheat straw a complete feed. A good mineral supplement will be essential and supplementation with 1-2 pounds of natural preformed protein is advisable along with the non-protein nitrogen added by ammoniation. Toxicity problems, involving calf losses and wild irrational cattle behavior, have been reported when ammoniating high quality forages such as sorghum sudan hybrids. The problem appears to be related to high available carbohydrate content and the reaction with ammonia to form toxic methylimidazoles. Imidazole formation and toxicity problems have not been observed with ammoniation of wheat straw or similar products. If you're short of forage and wheat straw is available, give ammoniation a try.

Stay alert for potential problems which might result because of drought conditions:

1. Use of salt to limit feed intake may increase water intake 50 to 75% or approximately 50 gallons of additional water for each pound of salt. Water must not be limited in any way or salt toxicity may result.
2. Over-consumption of urea-containing supplements by cattle on forage scarce ranges can result in urea toxicity. Generally, cattle performance on urea-type supplements is also poor whenever energy or forage is in short supply.
3. Hay cut under moisture stress conditions, especially sorghum type hays, may contain high levels of nitrate. If in doubt, it would be good to test for nitrate before feeding such hays, especially before feeding large amounts. Producers who cut drought corn or sorghum for hay are encouraged to check nitrate levels before feeding. Be sure to take a good representative sample when sending to the laboratory for analysis.
4. Prussic acid or cyanide poisoning can also be a problem in grazing drought stunted plants such as Johnson grass, sorghum, sorghum hybrids, and sudan grass. If forage for hay is allowed to sun cure thoroughly for three to five days, bleaching out any bright green color, prussic acid should not be a problem.
5. Cattle grazing short pasture are more likely to consume toxic plants. See section in rangeland management on toxic plants.
6. Alternate day feeding of protein supplements, like cottonseed cubes, has been recommended to save labor. The practice is still good for high protein supplements but is not to be used for grain type supplements. High energy supplements (grain, breeder cubes, etc.) should be fed daily especially where three to six pounds or more daily may be fed. High energy

acid-producing feeds tend to decrease rumen pH and fiber digestion and alternate day feeding of large amounts, more than four pounds, simply magnifies the decrease in rumen pH. Further, unadapted cows should be started on grain feeding slowly or the problems of acidosis, founder and even death may result.

7. Rumen impaction may result where cattle receive inadequate protein (less than 7 to 8% CP in total diet) and too much of a low quality high fiber forage such as drought pasture or prickly pear or forage substitutes such as peanut hulls, straws or gin trash. Lack of adequate water will aggravate the impaction program.
8. Hardware disease. Hay harvested from vacant city lots, roadsides etc., broiler litter and other such feed may contain nails, wire, or foreign objects which can pierce the rumen wall resulting in death of the animal. Close observation of feeds and the use of magnets in grinder/mixers can help to reduce the potential consumption of problem materials by animals.

Chopping and Grinding Forages and Straw

When ruminant livestock cannot consume enough dry hay or roughage to meet nutritional requirements, intake can be increased by chopping or grinding. This may be particularly important when there is an abundant supply of roughage and grain is scarce or high priced. When roughage supply is limited it may also be necessary to ensure complete consumption of coarse stems, moldy portions, etc. Grinding prevents selective consumption and helps to mix and thus dilute portions of the ration which by themselves are unpalatable or possibly toxic. Grinding does not in itself make the feed any more nutritious; in fact it reduces the digestibility of the feed slightly, but because animals can consume more, a larger proportion of the feed intake is available for production (growth), and a smaller proportion is used for maintenance. Grinding also increases the ratio of propionic acid: acetic acid in the rumen which improves feed efficiency in beef cattle but reduces butterfat content of milk.

Guidelines

Don't grind forage for any class of ruminant livestock when the animal is capable of consuming amounts adequate to meet nutritional requirements. Grinding palatable rations for beef cows results in either overfeeding (wastage of feed) or the need to limit feeding (labor is wasted and cows have unsatisfied appetites).

Grind through one-half inch screen. Coarser grinding may be all right for good-quality hay when self-fed "basis". However, coarser ground material will allow other ration ingredients to settle out during handling and in self feeders, and may lead to bridging in the mixer and self feeder. Finer grinding may be better for very low quality roughage but costs are too high.

Efficient grinding requires a high capacity grinder and a tractor large enough (100 HP or more) to handle it. Power requirements increase considerably as the moisture content of the hay increases. That is why it is important to put hay and straw up in a dry condition (less than 20% moisture) and to protect it from taking on moisture. Also grinding damp hay leads to bridging and may promote heating in large self feeders if left too long before feeding. When complete rations are to be processed, use a grinder mixer. If forage is to be self-fed and supplementary feed hand fed, a tub grinder may be used. (If roughage is in the form of round bales, a tub grinder will have to be used).

When using high levels of poor-quality roughage in the diet, proper supplementation is essential to avoid impaction.

Since many livestock procedures will be using unfamiliar feeds or rations during periods of feed shortage, they should keep a close watch over animal performance and adjust rations as necessary

to meet production requirements.

Table 1. Example Ration for Early Weaned Calves^a

Feeds	Amount / 100 lb
Corn	40
Cottonseed hulls	27.5
Cottonseed meal	7.5
Soybean meal	10
Dehydrated alfalfa	7
Molasses	5
Limestone	1.25
Dicalcium phosphate	0.5
Salt	0.5
Magnesium oxide	0.1
Trace mineral	+
Vitamin A	4 million I.U. / ton of feed
Ionophore	30 grams / ton of feed

a) Feed a good quality grass hay free-choice

Table 2. Summary of Results Using Ammoniated Wheat Straw

Source	Type Cattle	Daily Gain		
		Untreated	Ammoniated	Response
Oklahoma ^a	500 lb. Yearlings	.60	1.25	+.65
Oklahoma ^b	mature open cows	.09	.40	+.31
Nebraska ^c	mature pregnant cows	.26	.88	+.62
Purdue ^d	mature pregnant cows	-1.00	-.18	+.82

^a all cattle received 3.1 lbs. of a protein-energy supplement

^b all cattle received 2.1 lbs. of a protein supplement

^c all cattle received 16 lbs. of alfalfa hay 3 times per week

^d cattle on untreated received 2 lbs. daily of a protein supplement, treated received 2 lbs. daily of a grain supplement