Iowa Beef Center
IOWA STATE UNIVERSITY

What's Ahead for Cows on Drought-stricken Pastures?

The answer to this question may be good or bad, but it surely will be costly unless the producer pushes his pencil.

Currently in Iowa, pastures vary widely from location to location. Some areas have adequate grass growth giving sufficient nutrition availability, while other pastures only 10 miles from the abundant area can be totally depleted.

On short pastures, essentially four problems will occur if they haven't already:

1. The cows will go down in condition and lose weight.
2. Because of weight loss, if the cows are not already bred back, they will not cycle regularly, thus resulting in slower rebreeding and lowered conception rates.
3. The cows will fall off in milk production reducing the calves' nutrition, resulting in poor weight gains.
4. If cows lose too much weight, next winter's feed bill will likely be more costly because the cows must gain back this needed weight.

These problems may exist even in areas of moderate rainfall. During low rainfall and hot weather situations most grasses go into dormancy and become dry and stemmy. With dormancy comes lower feed availability for grasses. In some instances grass quality may become poor as well, thus the cows cannot consume enough quantity to meet their energy demand. Again, the result is weight and condition loss with poor rebreeding and calf performance being the end result.

The critical need is energy! A cow nursing a calf of 90 to 150 days of age is under strain to rebreed while trying to satisfy the calf's demand for energy. Research has shown the calf's energy needs usually surpass the cow's milk production at approximately 110 days, thus the need for either creep feed or lush pasture to achieve high calf performance.

Four partial solutions to the short pasture situation

The first partial solution is dump your "free-loader" cows. In other words, cows that are open, have lost their calves, have soundness problems, or have not yet calved are competing with productive cows for feed. Culling these cows from the herd as soon as possible will return more dollars per unit of feed consumed.

The second partial solution might be splitting the cow herd into two groups for proper nutritional management. The first group would consist of first and second calving cows plus old and thin cows, while the second group would be the main mature cow herd that is likely to be in better flesh. With this type of split, supplemental feed can be given to those cows that likely need it without overspending on those that don't.

A third partial solution to short pastures is to creep feed the calves. Creep feeding eases the stress on the cow and will lower her feed consumption rate. This practice is sound if the cows are being fed. It also tends to be a sound practice when pasture conditions are short. Research shows that the best creep feed conversions occur when stressful situations are present and forage supply to the cow is low.

The fourth partial solution is to wean the calves from the cows. Work at Iowa State and other universities has shown this practice to work exceptionally well in making cows cycle regularly and rebreed early. Best results with early weaning occur when calves are between 90 and 120 days old and have been eating a creep ration for at least 10 days.

After the calves are weaned, the cow's energy needs are cut 30 to 40 percent, while her protein needs are cut in half. Due to these requirements, cows gain weight and rebreed easier. Early weaning of calves should strongly be considered on first and second calving cows. Because of more efficient conversion, it makes sense economically to feed the concentrates through the calf rather than to the cow.

Other considerations

Drought conditions can have an adverse impact on the health of your cattle. In addition to the effect of poor quality forage and limited energy intake on reproduction, excessive heat itself can adversely affect fertility.

High environmental temperatures cause an increase in early death of the embryo. Although fertilization occurs, the embryo dies at an early stage of development. If this occurs before the 16th or 17th day of pregnancy, cows will usually cycle on schedule the following heat period. If death of the embryo occurs after implantation in the wall of the uterus, return to estrus may be delayed for several days or weeks. High environmental temperature reduces the intensity of estrus activity.

Bulls are especially vulnerable to heat stress. Being subjected to overheating can cause damage to semen quality that may last for up to six weeks.

Provide artificial shade if ample natural shade is not available in areas where cattle spend most of their time during the heat of the day. It is especially important to have cows pregnancy tested in the fall after experiencing drought conditions.

Short pastures can potentially increase parasite loads. It's known that parasite eggs tend to concentrate more in the lower part of the forage plants, thus short pastures due to drought conditions can increase the potential parasite load. This would tend to suggest that strategic parasite control programs are more important during drought situations.

Sometimes cattle will consume potentially toxic weeds when pasture conditions are poor. Some drought stressed weeds accumulate high levels of nitrates and have, on occasion, caused problems. The risk of plant poisoning is minimal, however, if adequate hay and other feeds are provided during drought periods.

Oat hay can accumulate high levels of nitrate if grown on highly fertilized soil and has a short period of rapid growth and recovery from drought due to rainfall shortly before cutting. Oat hay harvested from diverted acres is usually not a high risk feed, since high levels of nitrogen fertilizer are seldom used in this situation. Small oat fields near farmsteads that have been heavily fertilized with manure can lead to an accumulation of potentially toxic levels of nitrates. Oat hay should be thoroughly cured prior to baling. Cattle are much more resistant to nitrate toxicity if adequate levels of energy are fed.

Feeding Strategies During Drought

What about feeding the cows? Everyone's first thought is hay, but let's do some thinking and pencil pushing.

Our goal is to supply feed dry matter, but the cow also must receive sufficient energy to maintain weight, nurse the calf and rebreed. This must be done as economically as possible.

Table 1 (next page) gives a cost breakdown on feedstuffs available to many cow-calf producers. During drought hay values can run in excess of $150 per ton. At this price, the cost per pound of total digestible nutrients (TDN) is extremely high when compared to concentrates like corn coproducts. High quality hay at $150 per ton and 10% waste is 34 percent higher than corn at $5.50 per bushel when looking at cost per pound of TDN.

It is likely corn silage will be a lower cost feed energy resource this year. However, this distinct advantage on paper may not be a reality unless the producer does a good job of storing silage. The process of putting corn silage in a pile on the ground leads to severe dry matter and nutrient loss. Either creating a storage structure for the corn silage harvest or utilizing currently available silage bagging systems is an important management consideration. Temporary storage systems like movable wooden A frames or the use of large round bales can reduce storage losses if managed properly and used with safety in mind.

Many may not have the silages available for purchase; however, most do have corn and possibly corn coproducts available, thus allowing them to partially substitute grain for hay. To stretch pasture supplies requires at least .5-1% of the cow's bodyweight in supplemental feed. It seems very practical to supplement short pasture with about 3 to 5 pounds of grain and limit hay consumption to 5 pounds daily. The best situation would be to feed corn stover or corn cobs with grain on the side. The stover and cobs would act as a filler while 3 to 5 pounds of grain/DDG/CGF would help meet the energy needs.

Another efficiency move that many producers have used successfully is tub grinding a total mixed ration. Using this process allows them to incorporate the right proportions of low quality forages with high energy grains and protein supplements.

Feed values, waste assumptions and costs change almost daily and differ widely among producers. To make an accurate comparison based on your own numbers, producers are encouraged to download the "Feed Energy Index" calculator from the Iowa Beef Center website. Find it, along with other decision tools, here:
http://www.iowabeefcenter.org/software_calculators.html

File: Animal Science 11

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Table 1. Energy cost breakdown on various feedstuffs.

Feedstuff	Cost per weight unit	Cost per pound as fed	Cost per pound of dry matter	Cost per pound of TDN	Cost per pound of TDN with Waste
Legume-grass hay (high quality)	$ 50/ton	$.025	$.028	$.052	$.057
11% moisture*	100/ton	.050	.056	.104	.114
54% TDN*	150/ton	.075	.084	.156	.172
10% Waste*	200/ton	.100	.112	.208	.229
Corn stover					
15% moisture*	$40/ton	$.020	$.024	$.047	$.061
50% TDN*	50/ton	.025	.029	.059	.076
30% Waste*	60/ton	.030	.035	.071	.092
Corn silage					
60% moisture*	$40/ton	$.020	$.050	$.071	$.071
70% TDN*	50/ton	.025	.063	.089	.089
0% Waste*	60/ton	.030	.075	.107	.107
Soy hulls					
10% moisture*	$160/ton	$.080	$.089	$.111	$.111
80% TDN*	175/ton	.088	.097	.122	.122
0% Waste*	190/ton	.095	.106	.132	.132
Shelled corn					
12% moisture*	$5.00/bu.	$.089	$.105	$.117	$.117
91% TDN*	5.50/bu	.098	.116	.128	.128
0% Waste*	6.00/bu	.107	.126	.140	.140
Oats					
11% moisture*	$2.00/bu	$.063	$.070	$.092	$.092
76% TDN*	3.00/bu.	.094	.105	.139	.139
0% Waste*	4.00/bu	.126	.140	.184	.184
Legume-grass hay (low quality)					
11% Moisture*	$ 50/ton	$.025	$.029	$.054	$.062
52% TDN*	100/ton	.050	.056	.108	.124
15% Waste*	150/ton	.075	.075	.162	.178
Distillers dried grains					
10% Moisture*	$200/ton	$.100	$.111	$.111	$.111
100% TDN*	215/ton	.108	.119	.119	.119
0% Waste*	230/ton	.115	.128	.128	.128
Corn gluten pellets					
12% moisture*	$150/ton	$.075	$.083	$.098	$.098
88% TDN*	170/ton	.085	.094	.111	.111
0% Waste*	190/ton	.095	.106	.124	.124

*Assumed moisture, TDN and waste for each feedstuff