

# Post-Drought Feeding—

## Supplements Expensive, But Justifiable

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*This year's winter forage situation poses unique problems for much of cattle country. This article examines available supplements and how to use them to improve cow condition.*

**T**he drought of 1983 has been disastrous for Midwestern purebred and commercial cow-calf producers alike. Not only has the drought diminished the size and quality of our winter feed supply, but many cows have been stressed nutritionally by a host of factors throughout the spring and summer. At the expense of being somewhat regionalized, we concluded that a very serious and unique problem exists here that deserves some special attention.

Many cows have been stressed through the summer because of short, "burnt-up" pastures, the result of the most serious and prolonged Midwestern drought since the early 1930s. And that's not all. Let's not forget the spring of 1983. Many areas experienced the wettest, muddiest calving season in recent history. Of course, the severity of these problems were different from state to state and county to county. However, you can see that we have all the ingredients for some very thin cows going into the winter this year.

Another factor unique to 1983 is the government's payment-in-kind (PIK) program. Heavy farmer participation in PIK caused record numbers of acres being diverted from corn production. Cover crops were established on the set-aside acres, which were selected based on price and availability of seed and not on forage quality or yield. Most cover crops were sown at very low seeding rates, allowing for the encroachment of foxtail and other weeds. Enter the drought.

With the hay crop in southern Iowa (and other states as well) reduced by one-third to one-half of normal, many counties were allowed to harvest forage from PIK acres for winter cow feed. So we have an increased supply of fall harvested hay that contains overripe legumes clover, red clover and alfalfa, mature grasses and varying proportions of foxtail and other weeds. Let's call this PIK hay. Other "unusual" forages that may be used are sorghum-sudangrass silage, drought-damaged corn silage and soybean stover. Midwestern cowmen would typically rely on corn crop residues to make up for a short hay crop. This may be the case this year to some extent, but the

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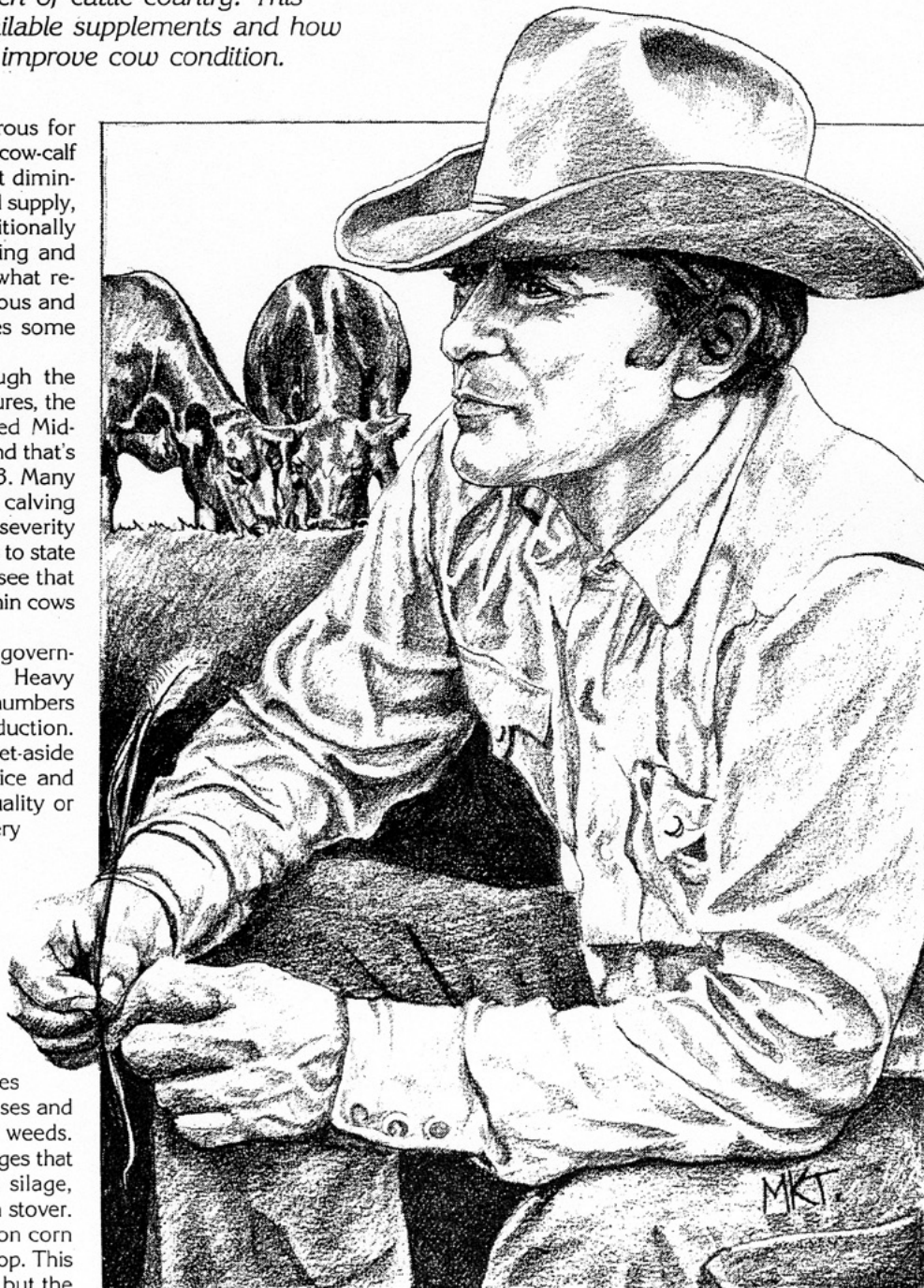


Table 1. Projected Average Nutrient Content of Feeds Available for Beef Cows in the Midwest (1983)

Feedstuff	Dry Matter (%)	Total Protein (%)	Total Digestible Nutrients TDN (%)
—100% Dry Matter Basis—			
Alfalfa-grass hay	90	15	55
Corn grain	85	10	91
Corn stover	80	5	51
Drought-corn silage	40	9	62
PIK hay	90	9.5	45
Range cubes (20%)	90	22	77
Sorghum-sudan silage	28	9	52
Soybean stover	88	4.3	42

PIK program has reduced the supply of corn residue. Also, the drought has caused much of the corn residue to be very questionable in quality.

The effects of poor cow condition at calving on rebreeding performance have been well documented. But how can we supplement these poor quality forages to improve cow conditions? What feeds will be needed for substitution? At what level? These are the questions that need to be answered.

The first step in solving the problem is to understand the value of the feedstuffs that we have available. By far the most important nutrients to be considered are energy and protein. The protein and total digestible nutrient (TDN) values of several available feedstuffs are presented in Table 1. Most of the feedstuffs listed provide adequate protein for gestating cow rations. Corn and soybean stover would undoubtedly require supplemental protein when used as a major portion of the ration. Also, protein quality could be poor in PIK hay and sorghum-sudan silage because of maturity and heat damage during ensiling. Energy or TDN is our major consideration, however. If the TDN requirements are met with these poor quality feedstuffs, it is very likely that the protein requirements will be met as well.

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Using alfalfa-grass hay as a standard for TDN, drought-corn silage is an excellent source of energy for cows. Corn stover and sorghum-sudan silage are slightly lower in TDN, while soybean stover and PIK hay are considerably lower in TDN than alfalfa-grass hay. The low TDN content of the PIK hay is more a function of maturity than the forages in the hay. For example, sweetclover hay is 56 percent TDN at early bloom and 48 percent TDN at maturity. It is expected that foxtail is even more extreme in this pattern of decreasing TDN content with maturity. PIK hay is certainly better than a snowbank if it is properly supplemented and

the cattle can consume enough of the material.

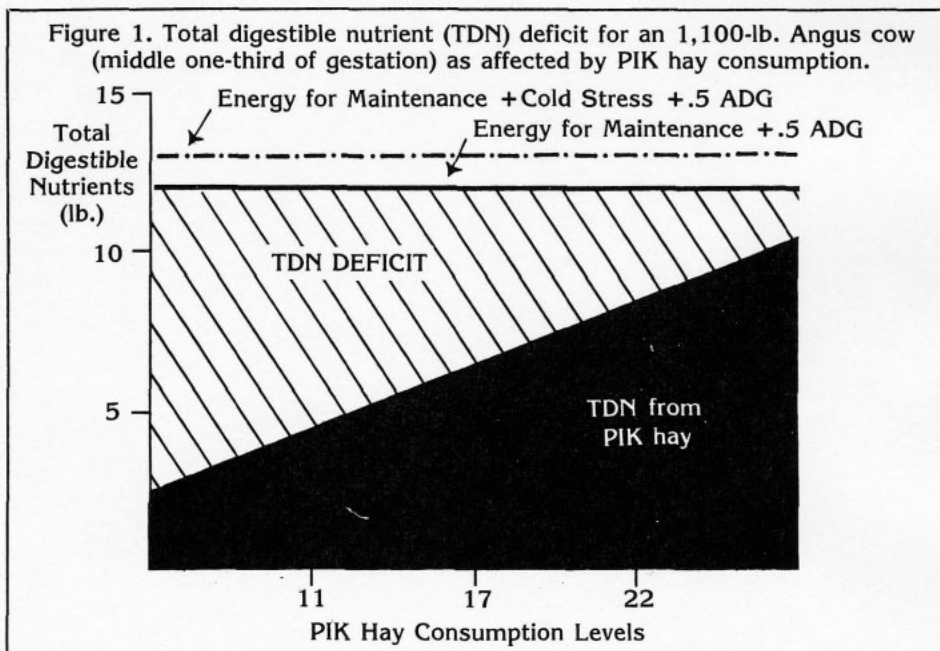
The second item that quantitates a feed's value is how well the cow will consume it. When working with marginal energy feedstuffs, achievement of high dry matter intakes can many times be quite difficult. For instance, research at midwestern universities has shown time of corn stover harvest to be very instrumental in how many pounds of the material the cow will eat. It is not uncommon to see intakes depressed 20 to 30 percent with late harvests. This decrease in feed palatability is due mostly to an increase in maturity. More maturity generally results in a lowered leaf to stalk ratio and greater amounts of plant lignin. In the case of corn

need to do the best job possible in calculating how much feed is being wasted and knowing how heavy the bales are. The "eye of the master" is indeed part of the formula when balancing rations. If we do not know the quantity of low quality forage consumed then we are at a loss in figuring out the supplementation necessary.

To show the impact of low quality forage consumption, Figure 1 is provided. The horizontal solid line near the top shows the energy requirement in pounds of total digestible nutrients (TDN) for an 1,100-lb. Angus cow in mid-pregnancy needing to gain one-half pound daily. The dotted dashed line above it is when the cow is undergoing 30 degrees of cold stress. TDN that comes from PIK hay is represented by the sloping line. The cross hatched area represents the energy shortage with varying levels of PIK hay consumption.

Now one can see how consumption is important to feed value. If a cow only consumes 11 lb. of PIK hay, she is taking in 4.5 to 5 lb. of TDN, less than 40 percent of what is needed. On the other hand, if PIK hay consumption reaches 22 lb., then approximately 70 to 75 percent of the TDN requirement is met. Our best estimate for PIK hay consumption is likely to be between 15 and 20 lb. It needs to be understood that this is consumption, not what is being trampled into the mud, laid on for bedding, etc.

Corn stover and other types of small grain



stover, the decreased palatability may be due to weather losses and fewer leaves and husks being harvested into the bale or stack.

High consumption of low quality forages is vitally important to meeting the cow's energy requirements. However, exact knowledge of consumption is very difficult to get a handle on because of the way most producers feed their cows. The use of big bales and sometimes no hay rings leaves us with wide variations in estimates. Therefore, we

straws will have similar types of consumptions. This leaves us in a position of figuring out how to best supplement the ration. If your cows are in moderate to excellent condition supplementation requirements will be less, but most likely needed. Another point to be understood is this is during mid-pregnancy. Late-pregnancy energy requirements are 15 to 20 percent higher and feed intake will not increase. In fact, it may decrease due to enlargement of the fetus.

How to supplement these feeds is the question at hand. First, consider what feed alternatives you have and then look at which resource is most economical. In the Midwest high concentrate feeds will likely be most cost efficient because of high energy density and low cost of transportation and feeding. Because meeting the energy (TDN) requirement is most important, one should price evaluate feedstuffs in that manner. For instance, a bushel of shelled corn contains 43 lb. of TDN. If corn is \$3.25 per bushel then the price of TDN would be 7.5 cents per pound. Alfalfa-grass hay contains 990 lb. of TDN per ton. If the cost of this hay plus transportation is \$80 per ton then the price of TDN is 8.1 cents per pound. Corn is a better buy at these prices.

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How much supplementation is needed? Table 2 gives recommended feeding rates for thin conditioned cows. These feeding rates will meet the maintenance requirement plus let the cow gain one-half pound

Table 2. Supplementation of low quality forage rations to thin condition 1,100-lb. Angus cows

Forage (consumption)	Supplemental Feeds			
	Alfalfa grass hay	No. 2 corn	Drought corn silage	No. 2 corn with 3 lb. 20% range cube
PIK hay (17 lb.)	12	7.5	23	4.8
Corn stover (20 lb.)	10	6.5	20	3.7
Sorghum sudangrass silage (60 lb.)	8	5.0	16	2.3

daily. With higher conditioned cows the amount of supplementation will decrease by one-third to one-half. It needs to be clear that only one of the four supplemental feeds is used, not a combination of them. As an example, when PIK hay is fed and the daily consumption is 17 lb. then 12 lb. of alfalfa-grass hay is needed as a supplement. Or, one may choose to feed 7.5 lb. of corn instead.

Protein and mineral supplementation are always a topic of discussion. During pregnancy crude protein requirements run about 1.0 to 1.5 lb. daily. If 17 lb. of PIK hay is consumed, the total crude protein intake is 1.45 lb. However, if protein quality is poor, you might consider feeding a small amount of supplemental protein for insurance. The same could be said for sorghum-sudan silage that has undergone heating during ensiling. Heat-damage ties up much of the protein and causes it to become indigesti-

ble. Most cattlemen will supplement mineral free-choice to meet the cows requirements. PIK hay, corn stover and sorghum-sudan silage will be lower in calcium than alfalfa-grass hay. You may want to consider supplementing a mineral that is higher in calcium than usual.

We realize that it is impossible to cover all of the situations in terms of cow condition, feedstuffs available and ration alternatives. And we hope that the situation outlined here is never repeated. But it is important to take a step back and examine the stress these cows have experienced this year. Think about the quality of the feedstuffs and their ability to promote adequate condition by calving time. Certainly in many conditions expensive supplemental feed must be purchased. But if rebreeding performance must suffer, the cheapest ration will probably not be the most profitable feeding program. AJ