Livestock Nutrition

Feeding Cows Illinois

General Information

Of the factors that influence the growth and reproductive performance of beef cows, proper nutrition is probably the most critical. Because feed costs represent over half the total cost in a cow-calf production system, it is very important to keep feed costs low while meeting your animals' nutritional needs. Vital nutrients in beef cattle diets include water, energy, protein, calcium, phosphorus, potassium, sodium, trace minerals, and vitamins.

Types of Diets

Depending on your circumstances, you may choose from a number of feeding approaches for your herd. The traditional approach is to allow the cattle unlimited access to pasture or hay. But if the forage is not sufficiently high in protein and other nutrients, the cows may be malnourished even though they have all they can eat. Poor quality forage and crop residues have a high proportion of fiber to protein which takes longer for cows to digest. Consequently, cows can eat only about one and a half times their body weight per day of low-quality forage. If the forage is of high quality, however, cows can consume about three percent of their body weight daily. Unlimited access to feed is sometimes referred to as ad lib, short for the Latin ad libitim.

It may be necessary to supplement a low- to medium-quality forage diet with high-quality hay, or with soybean meal, grain, or co-products like distillers dried grains or corn gluten feed. With supplementation, cows can actually digest more low-quality forage—up to two percent of their body weight. Grain supplementation should be no more than 0.5 percent of the cow's body weight **(BW)**. If the forage is of such poor quality that more supplementation is required, you should consider using byproducts.

The most economical way to feed beef cows is to graze the cows. Brassicas and small grains with cornstalks can be used to provide fall and winter grazing very economically. If the cattle need to be fed due to snow cover or other factors related to your farm, you should develop a low cost method of feeding the cows. Following is a brief discussion of the factors influencing nutrition and some example diets. If your cows are thin or heavy milking, you will need higher energy diets than the examples provided. If your cows are larger than those described in the example, they will need proportionally more feed.

Water

Water is often the forgotten nutrient. **It is important to have an adequate supply of fresh, clean water available for cattle.** To be sure your water is not contaminated with chemical run-off or biological organisms, you should have it tested by one of the commercial services that are widely available.

Energy and Protein

The primary nutrients of concern for beef cattle are **energy** (referred to as "total digestible nutrition," or **TDN**) and **protein** (also called "crude protein," or **CP**). The example diets would need to be modified to account for these factors.

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Table 1 presents the composition of common feeds, including their dry matter (DM) factor, energy and protein provided, and the presence (+, ++) or absence (-) of the macro minerals calcium, phosphorus, and potassium. Actual values vary widely—it is advisable to pay for a nutrient analysis of your forage. If you buy commercial feed mixes, you can use the content analysis provided by the manufacturer. All values are expressed on a dry-matter basis to permit comparison of feeds that vary in moisture content.

TABLE 1. Composition of common feedstuffs

				Nutrients		
Feed	**DM**	**TDN**	**CP**	**Ca**	**P**	**K**
Alfalfa (early bloom)	88	53.0	18.6	++	+	++
Afalfa (late bloom)	88	50.0	12.9	++	-	++
Brome (**vegetative**)	**88**	**56.0**	**14.6**	**++**	**+**	**++**
Brome (late bloom)	88	53.0	6.0	++	-	++
Corn (cracked)	87	91.0	8.6	-	+	
Corn Silage	35	69.0	8.0	-	-	+
Clover (red; fresh)	25	64.0	15.6	++	+	++
Clover (red-hay)	88	55.0	15.5	++	+	++
Fescue (vegetative)	88	61.0	12.4	++	+	++
Fescue (late bloom)	88	46.0	7.4	++	-	++
Oats (rolled)	88	77.0	13.3	-	+	
Oat hay (early bloom)	88	64.3	9.2	++	+	++
Orchardgrass (vegetative)	88	72.0	18.4	++	+	++
Orchardgrass (late bloom)	88	54.0	8.4	++	-	++
Sorghum silage	**35**	**58.0**	**7.5**	**+**	**-**	**++**
Soybean meal	**90**	**90.0**	**44.0**	**+**	**+**	**++**
Sudex silage	**35**	**55.0**	**10.8**	**+**	**-**	**++**
Wheat (**cracked**)	**90**	**92.0**	**13.5**	**-**	**+**	
Wheat silage	**35**	**61.9**	**11.9**	**++**	**+**	**++**

Table 2 shows the typical composition of some common feeds and their prices. Using the values from this table and from Tables 1 and 3, diets were calculated for a 1,200-pound dry cow (last third of gestation) and for a 1,200-pound lactating cow in average condition with average milk production. Tables 4 and 5 show the calculated amounts and costs of various diets for these scenarios.

TABLE 2. Typical feedstuff values

	TDM. %	CP, %	DM, %	Cost, $
Corn	91	8.3	88	2.10/bu
Corn gluten feed	87	20.0	40	42/ton
Corn Silage	72	8.0	35	20/ton
DDGS (dry)	88	28.0	90	85/ton
Alfalfa hay	60	19.5	85	85/ton
Grass hay	54	12	85	85/ton
Mixed hay	54	12	85	60/ton
Poor hay (mature fescue)	46	7	85	30/ton
DDGS (wet)	88	28.0	45	28/ton
Soybean meal	90	44	90	162/ton

TABLE 3. Hay waste

Feeding method	% wasted
Limit fed with corn—small bales or ground hay	0
Limit fed—bunk, small bales or ground hay	10
Ad libitum ("unlimited")—bunk, small bales or ground hay	10
Ad libitum—big bales	30
Ad libitum—big bales (outside)	40

Note: Table 4 shows there is a large variation in cost per day for the diets—they range from 59 cents to $2.14 per day. If the cows were fed for 120 days, the high-cost diet for the dry cow would be $186 more (per cow) than the low-cost diet. That difference could certainly "make or break" your profit situation!

TABLE 4. Calculated diets for a dry cow (1,200 lbs.)

	Lbs. (as fed)	Cost/d, $
Limit corn—hay	8.2-7	.62
Limit DDGS (wet)—hay	15.6-7	.53
Limit DDGS (dry)—hay	7.8-7	.58
Limit gluten—corn	6.6-6.6	.50
Limit gluten	29	.59
Alfalfa* (ad lib, big bale)	50.4	2.14
Alfalfa (limit, bunk)	22	.94
Mixed hay*, (limit, bunk)	24.4	.73
Mixed hay*ad lib, big bale)	47.4	1.42
Poor hay-DDGS (dry)	29.4-7.4	.75
Poor hay, mixed hay	29.4-10.1	.74
Poor hay, alfalfa hay	29.4-6.9	.73
Corn silage—DDGS (dry)	37.1-1.0	.41
Corn silage—SBM	37.1-0.8	.43

TABLE 5. Calculated diets for a lactating cow (1,200 lbs.)

	Lbs. (as fed)	Cost/d, $
Limit corn, hay, SBM	13, 7, 1.4	.90
Limit gluten	39.4	.90
Alfalfa (limit, bunk)	33.1	1.40
Alfalfa* (ad lib, big bale)	50.4	2.14
Mixed hay (ad lib, big bale)	47.4	1.42
Corn silage, SBM	59.2, 2.8	.96

Acknowledgments

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