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The Cow-Calf Manager: Winter Feeding and Supplements

Livestock Update, December 1997

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Most of the Spring calving cows in Virginia are entering the last trimester of gestation. Many changes are happening in the cow. The calf is growing at a rapid rate; it will gain 50 to 70 lbs. The cows uterus is growing to keep up with the calf, and the cows udder is developing for the new lactation. All these processes require about 25 % more nutrients than the cow needed in early gestation just after weaning.

The last 60-90 days before calving are critical to the future health of the calf and reproductive ability of the cow. During this period cows need to gain at least 1.0 lb. / day to maintain their body condition while keeping up with calf growth and other physiological changes. Pregnant heifers need to gain 2.25 lbs. / day because they need to do everything the mature cow does plus continue to grow. The nutritional requirements for 1200 lbs. cows and pregnant heifers of the same mature size are listed in Table 1.

This time of increased nutritional need coincides with the time of the year when little quality grazable forage is available. This year there is almost no grazable forage left. Most of the nutrition must come from stored forage (hay or silage) and supplements. Improper supplementation may at best cost you money. At worst, you could have an increase in calf health problems and reduced conception rates next breeding season. So, proper cost-effective supplementation is important.

Table 1. Nutritional needs of 1200 lbs. cows or pregnant heifers during the last trimester of gestation.

Animal	Dry matter		Crude	Calcium	Phosphorus
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type	intake (lbs.)	TDN*	Protein	(Ca)	(P)
Cow	24.5	53 %	8.0 %	0.25 %	0.16 %
Heifer	23.7	57 %	9.0 %	0.31 %	0.22 %

*TDN = Total digestible nutrients, a measure of energy

Energy and Protein. How effective are our hays and silages in meeting the nutritional needs of the cow or heifer during the last trimester? Hays can vary considerably in energy or TDN content. Table 2. Lists the nutritional content of some common hays and silages. Notice that most of the HAYS NEED TO BE SUPPLEMENTED WITH ENERGY, but not protein.

For example, comparing the cow needs in Table 1 to the content of forages in Table 2. Cows and heifers fed mature fescue hay would also need corn. Only heifers would need corn in addition to orchardgrass hay. Cows fed switchgrass hay would also need cottonseed meal. Heifers fed switchgrass hay would need more cottonseed meal than cows.

Recently, extension agents from across the state sampled hays for nutrient content. They also had the bales available for producers to see and let them guess the weight, the % TDN and % crude protein. Surprise, most of us were *not* very good guessers! Almost all the beef producers (and specialists, too) *overestimated* the weight of the bale and *underestimated* protein content. We were only slightly closer on energy content. So, you **must sample** your hay or silage before deciding on a supplement.

Table 2. Nutrient content of some hays and forages common to Virginia

Hay	% TDN	% Crude Protein	% Calcium	% Phosphorus
Fescue, mature	44	10.8	.41	.30
Fescue, boot	58	11.5	.43	.32
Switchgrass	55	7.5	ND	ND
Orchardgrass, mid-bloom	56	9.2	.26	.30
Corn silage	68	8.2	.31	.24
Alfalfa Haylage	58	17.0	1.74	.27
Stockpiled, Fescue-legume	59.1	12.9	ND	ND

ND= no data

As a rule, corn and sorghum SILAGE have plenty of energy, but NEED PROTEIN (Table 2). Small grain silage may need limited amounts of energy added, where as alfalfa silage will meet the energy and protein needs of cows at this stage. Crop residues like corn stalks and straws will require protein and perhaps energy supplementation.

Vitamins and Minerals. Because most of the soil in Virginia is deficient in phosphorus, most hays will need to be supplemented with phosphorus and maybe some calcium during the winter. In 1996, the Beef

Cow/Calf Herd Health and Productivity Audit reported that forages in our region are deficient in the following trace minerals: Iodine, Copper, Zinc, and Selenium. These minerals should be supplemented. The sulfate or chelate forms are preferred due to their ease of absorption. Sulfate forms tend to be less expensive.

Vitamins A and D should also be supplemented. These can either be added to the mineral or given as a single injection. The injection is good for 2 to 3 months. Most commercial mineral suppliers have a product that includes Vitamin A & D with their mineral. Extra vitamin E is probably not needed in cow or heifer diets.

Supplementation Strategies. Supplementation of beef cows need not be complicated or costly, but in recent years it seems we in the beef industry have managed to make it both.

First, hays and silages *must be analyzed* for nutrient content. This usually costs \$ 10 to \$ 25 per sample and can save 10 to 50 times the cost in supplement savings. After the sample is analyzed then a supplementation program can be designed. Much attention has been given in recent years to protein supplementation for beef cows in the winter. This concept came from the West where grasses and hays are very different from those in our region. However, in the Mid-Atlantic area protein is often the last thing a brood cow in late gestation needs. In general, hays in Virginia will need ENERGY supplementation. Energy supplements need to be fed daily. This means corn, milo, soy hulls, barley or even wheat. Barley, wheat and soy hulls will also add some protein to the diet. Generally, these supplements should be available for \$100 to \$ 150 per ton in bulk.

Protein supplements are needed for corn silage, corn stalks and some extremely over mature hays. Soybean meal, alfalfa cubes, cottonseed meal, whole cottonseed, brewer's grains, corn gluten, and poultry litter are excellent sources of protein for beef cows. All of these sources will contribute a significant amount of energy as well. Some protein supplements can be fed every other day if the rates fed are increased. These supplements vary in cost especially the by-products. However, these protein supplements should range from \$ 40 to \$ 350 per ton in bulk.

Mineral supplementation for dry beef cows is very simple. A mix that is 1/3 to 1/2 dicalcium phosphate and the rest good quality trace mineralized salt. As long as copper and selenium are high in the trace mineral, they will meet the needs of most cows. There are many commercial minerals that are available and most have their merits. The advantages to these minerals depend on the individual operation.

Now a word about complete feeds. I hesitate to talk about these only because my statements are sometimes taken the wrong way and I upset somebody. Complete feeds whether dry or liquid are nutritionally sound. There is nothing nutritionally wrong with them except they may result in over or under-supplementation. Cows may eat more of self fed supplements than they need. Wow, these supplements taste great compared to hay!

They also tend to be very expensive when compared to the alternatives. These feeds usually range from \$ 200 to \$ 500 per ton on an 85% to 90% dry matter basis (most grains are 85-88% dry matter). Producers are paying for the convenience of premixed feeds and perhaps some ingredients that they don't need. In the case of liquid supplements, the cost includes transportation of a product containing a high percent moisture and filling the tank. Mixing, transportation and labor are all items for which the sellers of these products deserve to be paid. Just keep in mind what you are paying for and how it fits into your operation.

Beef producers usually want a quick recipe for supplementation. I advise producers to sample their forage, and get with their extension agent or nutritionist to design a ration. Two examples of diets for

cows would be: 1) fescue hay plus 6 to 8 lbs. of corn. 2) 35 to 40 lbs. of 80% corn silage, 20 % poultry litter mix.

Take those forage samples! *Next Month*: Pre-calving management

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