

# Building a Complete Nutritional Program for the Cow Herd

Stephen B. Blezinger, Ph.D., PAS  
Reveille Livestock Concepts  
ABC Nutrition Service, Inc.



**ABC Nutrition Service**  
The Foundation of Sound Nutrition...

## Introduction

- Nutritional programs are wide ranging in scope and detail.
- Some are very simple – grass and hay. If they can't get it from pastures or a round bale, they won't get it.
- Others are very complex including multiple forage types and supplements. Some of these are carefully designed and some take the shotgun approach.



## Intro Continued. . . .

- Unfortunately, either of these approaches leaves a lot to be desired. The simple program is compromising animal performance (breeding, health, growth) and the operation is losing money because animals are not performing optimally.
- The overly complex operation with an extensive array of supplements may be spending too much money and wasting nutrients. In some cases they may be depressing performance because of over provision of specific supplements.



## Intro Continued. . . .

- Additionally, many producers only consider their nutritional program at a given moment.
- As they approach the feeding season (generally fall and winter) and need to provide a forage source, they also decide, at that point, that they need to provide a mineral or a protein source without a lot of advance thought.
- This reduces or eliminates the option to plan properly and evaluate feeding and supplementation options.
- And in many cases, because of this lack of planning the main consideration is the unit cost of the feed or supplement (\$/bag, \$/ton, etc.).

## Intro Continued. . . .

- In the beef cattle industry there is a constant, unwavering need to maximize efficiency and revenues. Note: this does not say maximize production.
- For instance, at high levels of reproductive performance the cost of increasing calving percentage only one unit may actually reduce net farm revenues.
- Since nutrition as a whole is the single highest annual production expense for most operations it makes sense to:
  - 1) plan this program as completely as possible.
  - 2) understand this is a dynamic situation that requires constant monitoring and forward thinking.



## Some Basics

### The typical cow calf operation is built on a forage base.

- This forage base is made up of the ranch/farm's pastures and harvested forage production.
- The largest amount of dry matter and nutrients come from these forages.
- In many cases, especially in the many locations around the country that have been affected by drought conditions over the last few years, these forages had to be purchased from other areas and could not be produced on the farm.



## Some Basics

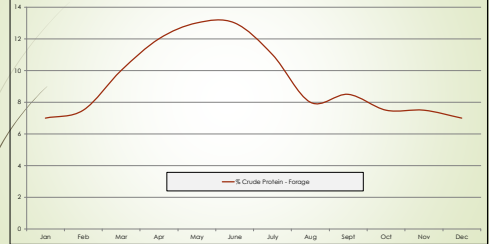
### The nutrient values of the forage base are dynamic.

- Over the course of the production year, nutrient values go up and down.
- The following slide illustrates typical crude protein values for a beef cattle forage base made up of coastal bermudagrass pastures and hays under normal moisture conditions.
- In the months of March through October forage nutrients are provided predominantly through pasture while November through February forage nutrients are provided by hay.



## Some Basics

Figure 1. Typical Crude Protein Values - Coastal Bermudagrass



## Some Basics

### Nutrient Requirements for the Animal are Dynamic.

On any cattle operation at any given point in time there are animals that have a variety of nutrient requirements. Let's assume these cattle are all the same breed. This reduces the variation a bit. At any given point, depending on the operation there may be:

- Pregnant dry cows
- Newly calved, open cows
- Bred cows nursing young calves
- Bred cows nursing big calves
- Bred cows late second to third trimester, calves have been weaned
- Developing heifers, open
- Developing heifers, bred
- Developing bulls
- Mature Bulls



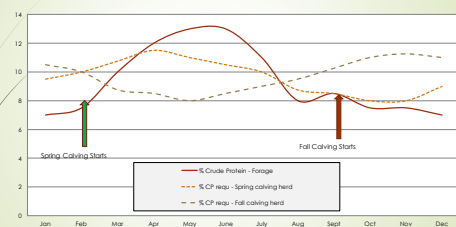
## Some Basics

### Breeding and Calving Seasons - Spring - Fall - Year-Round

- Another issue that has to be considered is how the breeding/calving seasons are managed.
- With operations that have a year-round breeding/calving season, developing and managing an accurate nutrition program is challenging. Primarily because you have multiple production classes of cattle available at any given point in time.
- In calculating the "average" nutrient requirement for the cow herd there is a great deal of variability meaning you will be **over-feeding** a number of animals and **under-feeding** a similar number of animals.
- This results in a much lower degree of operational efficiency.
- This situation makes a case for a limited breeding season where cattle are managed and the nutritional program based on much lower variation (i.e. a 60-90 day spread in the status of individual animals).
- Additionally, if breeding animals are grouped into pastures based on production stage, they can also be supplemented more accurately.

## Some Basics

Figure 2. Comparison of Crude Protein Values provided by Coastal Bermudagrass Forage Base and Required by Springs and Fall Calving Herds



## Some Basics

### Matching the Forage Base and Animal Requirements

- So based on this, we can see that the ability of the forage base to provide for the nutrient needs of the herd varies.
- The one thing to consider is that a chart similar to that shown in both Figures 1 and 2 can be created for every essential nutrient the cow requires.
- It can also be created for the different production classes. Figure 2 accounts for the changes in the requirements of the breeding cow as she moves along the calendar.
- Separate calendars can be created and plotted for developing heifers and bulls, mature bulls (although after maturity, their requirements don't vary that much except as related to weight loss inherent to breeding activity).



## Some Basics

### Matching the Forage Base and Animal Requirements

- So we know the nutrients these animals require include protein, energy and the individual vitamins and minerals.
- These levels in the forage base will change over time as related to a variety of factors including moisture content, fertilization, plant maturity, grazing patterns, etc.
- Maximizing the use of growing and farm produced forages, in general, is the most economical.
- Adverse environmental conditions (drought, extreme cold, excessive moisture), can reduce the availability of "home-grown" forage but a general goal of accessing what is immediately available is the top priority.
- Second, becoming a "grass farmer" is also at the top of the list. It is commonly stated that cattlemen are first and foremost, grass producers and that we simply use cattle to harvest and sell that grass in the form of pounds of beef.
- But becoming a student of forage production and management will go far in improving your cattle performance and operational efficiency.

## Creating the Nutritional Plan

### Forage sampling and analysis

- This needs to become a constant part of your program.
- Begin sampling pastures and harvested forages on a regular basis.
- These analyses will go into the development of a forage nutrient database for your operation.
- Maintain these numbers over time so that you can develop and track average nutrient values for specific forages during specific periods of time. For instance, nutrient values for hay cut and baled in June of each year.
- Each cutting should be samples and tested. The analysis should be recorded along with the conditions (fertilization records, moisture conditions, maturity estimate, etc.)
- Develop a relationship with a good forage lab.



## Creating the Nutritional Plan

### Forage sampling and analysis



### Forage Analyses Submission Form

Client: \_\_\_\_\_

Producer: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Sample 1 (lb)

Sample Type	Hay	Fresh Pasture	Feed	Supplement (pounds only)
Yields/Date:				
Cutting:	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup> (bale only)
Date of cutting:				

Sample 2 (lb)

Sample Type	Hay	Fresh Pasture	Feed	Supplement
Yields/Date:				
Cutting:	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
Date of cutting:				

Sample 3 (lb)

Sample Type	Hay	Fresh Pasture	Feed	Supplement
Yields/Date:				
Cutting:	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
Date of cutting:				

To submit additional sample, please attach additional pages.

Unit Samples:  
 Cash Sample: \$28.00  
 Field Cut: \_\_\_\_\_ (Checks payable to Custom ABC)

Mail Samples to: Custom Labs, P.O. Box 391, Golden City, MO 64708

The standard ABC Forage/Feed Report includes analyses of the following. Please contact us for other options.

Moisture/Dry Matter, %  
 Crude Protein, %  
 Crude Fat (EE), %  
 Acid Detergent Fiber (ADF), %  
 Neutral Detergent Fiber (NDF), %  
 Total Digestible Nutrients (TDN), %  
 Net Energy Lactation (NEL), Mcal/lb.  
 Net Energy Maintenance (NEM), Mcal/lb.  
 Net Energy Gain (NEG), Mcal/lb.  
 Calcium (Ca), %  
 Phosphorus (P), %  
 Magnesium (Mg), %  
 Potassium (K), %  
 Sodium (Na), %  
 Sulfur (S), %  
 Iron (Fe), ppm  
 Copper (Cu), ppm  
 Manganese (Mn), ppm  
 Zinc (Zn), ppm  
 Nitrites

ABC Nutrition Service, Inc.  
 447 County Road 4711  
 Sulphur Springs, TX 75482  
<http://abcnutritionlab.com>  
 903-352-3475

10/19/17-09

MIX GRASS HAY WALLACE FIELD  
 TRIPLE B/ ABC NUTRITION SERVICE INC  
 INDUSTRY, TX

	WET	DRY
Moist / Dry Matter	14.15557	25.01471
Protein	7.62503	8.947198
Adj Cr Protein	6.749423	7.937519
Crude Protein	6.278623	7.937519
A.D.F. - N	1.402929	1.647485
A.D.Fiber	38.86073	45.7
N.D.Fiber(C)	52.31911	69.43
TDN	47.45926	56.04703
NE Lactation	NICALAB 3786836	44535
NE Gain	NICALAB 2768922	2768545
NE Maint	NICALAB 4539006	5336906
Digest Energy	NICALAB 3929689	1120586
Crude Fat (EE)	% 2.5	2.94
Nitrogen	% 1.220033	1.434752
Calcium	% 46.74892	.55
Phosphorus	% 5.932409E-02	.07
Magnesium	% 21.2586	.25
Potassium	% 2052441	1.0
Sodium	% 0501703	.059
Sulfur	% 9.843391E-02	.116
Iron	PPM 144.585	170.0
Copper	PPM 4231721	5.0
Manganese	PPM 2634067	310.0
Zinc	PPM 11.25447	13.0

## Creating the Nutritional Plan

### How to Meet the Requirements

- Evaluate the cattle, identify your production groups. Determine what the requirements are for each group over the production year.
- Obtain a copy of the Beef NRC
- Develop a relationship with a qualified nutritionist.
  - This person may be at a local or national feed company or maybe an independent.
  - They can be of assistance in developing and tracking much of the information discussed here.
  - They can help you build a complete nutritional program for some or all of your herd.



## Creating the Nutritional Plan

### How to Meet the Requirements

- Develop a nutrient delivery and requirement calendar.
- This can be done fairly quickly and easily using a spreadsheet on the computer but this is not a prerequisite. It can be done just as effectively on paper.
- The main thing here is to put it in writing somewhere so it can be tracked and used to plan. You can use this to schedule what the nutrient availabilities will be at and over given periods of time.
- Be sure to include all nutrients. Even a shortage of one nutrient can affect overall performance. Do not expect this to be completely accurate from the very beginning.
- This will be a work in progress. It will give you a way to anticipate what you will need to do (supplements to purchase, etc.) as you look forward.



## Creating the Nutritional Plan

### How to Meet the Requirements

- Keep several things in mind:
  - There are multiple nutrient requirements that have to be met at any point in time.
  - Generally, the nutrient group that requires supplementation year round are **minerals and vitamins**. The only way you know for certain what the forage base supplies is by forage testing. Start with your mineral program. Use a good, loose, free-choice product. Don't cut with salt. Don't use mineral blocks.
  - Do not assume that just because your local feed store sells a given product that it meets your operation's needs. If you are going to buy a product "off the shelf," some homework will be required.
  - Compared to other supplements, minerals are fairly expensive. You can easily spend from \$25.00 to \$40.00 per bag for a quality product with different bells and whistles.



## Creating the Nutritional Plan

	Mineral Requirements of Beef Cattle.			
	Growing Cattle	Requirement		
		Pregnant Cows	Lactating Cows	Maximum Level
Calcium, %	0.45	0.3	0.45	2
Phosphorus, %	0.3	0.2	0.2-21	1
Magnesium, %	0.1	0.12	0.2	0.4
Potassium, %	0.6	0.6	0.7	5
Sodium, %	0.08	0.08	0.1	2
Sulfur, %	0.15	0.15	0.15	0.4
Iron, PPM	50	50	50	1000
Manganese, PPM	20	40	40	1000
Zinc, PPM	30	30	40	500
Copper, PPM	10	10	10	100
Iodine, PPM	0.5	0.5	0.5	50
Selenium, PPM	0.2	0.2	0.2	2
Cobalt, PPM	0.1	0.1	0.1	10
Molybdenum, PPM	-	-	-	5

## Creating the Nutritional Plan

### How to Meet the Requirements

- Keep several things in mind:
  - The next component to consider is **protein**.
  - Protein is a very primary required nutrient since its components (amino acids) are required in some form or level in virtually every process in the body. A protein deficiency will show up most readily.
  - Protein supplementation, when compared to forage supplies will vary the greatest throughout the year and between production classes.
  - There are many ways a producer can provide the needed protein levels.



## Creating the Nutritional Plan

Nutrient	Stage of production			
	Period 1: calving (45 days)	Period 2: breeding (45 days)	Period 3: early gestation (90 days)	Period 4: mid gestation (90 days)
Dry matter (lb)	20.6	21	19.5	18.1
Protein (lb/day)	2.5	2.6	2	1.3
IDN (lb)	13.8	14	11.5	8.8
Calcium (g/day)	36	38	25	15
Phosphorus (g/day)	25	27	20	15
Vitamin A (x 1,000 IU)	37	38	36	25

Requirements for an 1100 lb. crossbred cow, basic.

## Creating the Nutritional Plan

### How to Meet the Requirements



## Creating the Nutritional Plan

### How to Meet the Requirements

- Protein supplements will also supply energy, minerals and vitamins.
- Different product types have different considerations for use.
- The form you use is not that important but needs to be selected based on several criteria:
  - Cost – cheapest is not always best
  - Labor required – probably biggest driver
  - Equipment needed – none to a lot
  - Storage needed.



## Creating the Nutritional Plan

### How to Meet the Requirements

- Keep the supplementation program as simple as possible.
- Unless hand fed, if given access to multiple supplement sources, intakes of any individual supplement will vary significantly.
- Best case – winter feeding program:
  - Feeding good quality grass hay
  - Mineral supplement – ongoing, year round
  - Protein supplement – one of the types shown previously.
  - Complicated by adding additional sources.



## Creating the Nutritional Plan

### How to Meet the Requirements

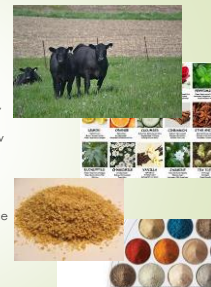
- Protein Supplements provide other nutrients as well.
- Energy
  - Carbohydrates – fibers, starch
  - Fat – very energy dense, other benefits
- Minerals and Vitamins
  - Macro Mins
  - Micro Mins
  - A, D and E
- Need to account for all the sources to prevent overfeeding.



## Creating the Nutritional Plan

### How to Meet the Requirements

- One Mineral program and Protein supplementation has been outlined, consider what nutritional tools you might use.
  - Fly control – Altrosid, Rabon both feed through products. Need to start feeding early in the year (i.e. ~early March). Use in combination with tags, dust/sprays.
  - Antibiotics – CTC – more of a challenge with new VFD. Still an option but use has to be specified and an Rx obtained.
  - Ionophores – Rumensin, Bovatec, GainPro, etc. Helps improve feed efficiency
  - Yeast – help improve fiber digestion, helps reduce stress effects (heat), can reduce pathogen effects in lower gut.
  - Other products (Essential Oils, toxin binders, etc.)



## Creating the Nutritional Plan

### A Quick Example

#### Winter feeding program

- Feeding the hay from the analysis shown (DM)
- 1100 lb cows with 30 day old calves
- Dry Matter Intake = 21.0 lbs. As Fed 24.25 lbs

	Hay Supply	Cow Requirements	Def/Excess	Suppl 2 lbs	Suppl 4 lbs
Dry Matter	86.5	--	--		
Protein, %	8.62	--	--	39.5%	19.75%
Protein, lbs.	1.81	2.6	-.79	.395/lb	.1975/lb.
Suppl AF Levels%				<b>44.88%</b>	<b>22.44%</b>
TDN%	56.05	--		112.0%	55.8%
TDN, lbs	11.77	14.0	2.23	1.12	.558
Suppl AF Levels%				<b>127.27%</b>	<b>63.4%</b>

## Thoughts to Take with You

- Every cattle operation is different.
- The basis of the nutritional program is the forage.
- Forage nutrient levels change over the course of a year.
- Ongoing forage testing is a must.
- Nutrient needs of the animals change over the course of the year.
- Proper planning means a constant comparison of supply and demand.
- There are many supplement choices both in type and composition.
- Keep the program as simple as possible.
- Calculate supply and include forage and all supplements.
- Establish the basics of your nutrition program and review on a regular basis.

**Thank You!!**

**Questions?**

- Dr. Steve Blezinger
- Reveille Livestock Concepts
- ABC Nutrition Service, Inc.
- (903) 352-3475
- [sblez@verizon.net](mailto:sblez@verizon.net)

