Basic Beef Cattle Nutrition

Why is Nutrition important?

A. **Proper Growth and Weight Gain**
   1. Young animals need good nutrition to reach maximum mature development.
   2. Market weight is improved and maximized with good nutrition management.

B. **Reproduction**
   1. **Breeding** – important for a successful breeding program (ovulation and conception are maximized through good nutrition).
   2. **Gestation (pregnancy)** – increases cows ability to carry fetus to term and give live birth to healthy calf.
   3. **Fetal Development** – important for healthy calves
   4. **Milk Production** – maximizes cow's ability to produce milk and maintain healthy weight during lactation. Also equates to higher weight gain for the calf.

C. **Disease and Parasite Resistance** – many disease and parasite problems can be minimized and even eliminated entirely through good nutrition management.

Important Nutrient Requirements

[These are the main points that will be discussed]

Energy

Animals need energy for every day functions and overall well being. Animals utilize energy just simply being out in the elements.

Energy Sources

Cattle are ruminants which mean they have chambered stomachs (4 chambers in cows). The process of regurgitating stomach contents and re-chewing it (chewing their cud) helps to break down the plant material to make it more digestible. In doing this the animal also creates internal heat.

Protein

Protein is one of the main building blocks of the body. It is a major component of muscles, the nervous system and connective tissue. Adequate dietary protein is essential for maintenance, growth, lactation and reproduction.

Protein Sources

There are many alternative grain and forage hay sources that can be used but make sure that they meet the nutrient requirements of your feeding program and are palatable to the animals. Best nutrient sources are of little use if the animals won't eat it! (Mixing of feeds can sometimes make certain feeds more palatable)

Minerals and Vitamins

A. **Selenium Deficiency** - results in a higher death rate in calves due to them dying of a condition called White Muscle Disease were muscle looks white instead of red, heart failure, and paralysis evidenced by lameness or inability to stand (downer cow).

B. **Magnesium deficiency** - in early lactating cows on pasture is what is called Grass Tetany, a highly fatal disease that could result in loss of animals if they are not treated right away.

C. **Calcium deficiency** - results in many forms: Milk fever, Osteomalacia, and Rickets in calves. Calcium is essential for lactating cows and nursing calves, as well as growing stock, as calcium is essential for strong bones and teeth, milk production, transmission of nerve impulses, maintenance of normal muscle excitability, regulation of heart beat, movement of muscles, blood clotting, and activation and stabilization of enzymes.

D. **Phosphorus deficiency** - leads to what is known as Pica, where cows, who are intensely deficient of P will chew bones or eat other animals to meet their phosphorous needs, and will also chew on wood or soil, and will also show signs of decreased growth rates, inefficient feed utilization, anestrous, poor reproductive abilities, weak fragile bones and joint stiffness.

E. **Salt deficiencies** - more troublesome in cattle, as they **always** need salt every day for: (Na) osmotic pressure maintenance, acid-base balance, body-fluid balance, nerve transmission and active transport of amino acids, as well as cellular uptake of glucose carrier protein, and Na, as a part of salt, is a major cation of extracellular fluid and provides the majority of alkaline reserve in plasma. Chlorine is necessary for activation of amylase, formation of gastric HCl acid, and is involved in respiration and regulation of blood pH. Deficiency of salt include muscle cramps, rough coat, decreased feed intake, licking and chewing various objects, as well as decreased production. **Dairy cows get hit the hardest first with salt deficiency, and may collapse and die if they have been salt deficient for a long period of time.**

Almost the animal's entire ability to function depends on salt!

Vitamins

If good range is available and/or a quality feed program is being employed the need for supplementing these nutrients will be minimized or even unnecessary.

Using Straw as a Feed Ration

Mixing Urea and Molasses with straw not only increases it's nutrition value but makes the straw much more palatable for the animals. (Soybean meal can also be used to increase nutrient value of straw feed.)

Evaluating your Feed Program

The condition and overall appearance of your animals is the most obvious and immediate means of evaluating the effectiveness of your feed program.

Body Condition Scoring

- 1 Severely emaciated; starving and weak; no palpable fat detectable over back, hips or ribs; tailhead and individual ribs prominently visible; all skeletal structures are visible and sharp to the touch; animals are usually disease stricken. Under normal production systems cattle in this condition score are rare.
- 2 Emaciated; similar to BCS 1, but not weakened; little visible muscle tissue; tailhead and ribs less prominent.
- 3 Very thin; no fat over ribs or in brisket; backbone easily visible, slight increase in muscling over BCS

borderline

- 4 Borderline; individual ribs noticeable but overall fat cover is lacking; increased musculature through shoulders and hindquarters; hips and backbone slightly rounded versus sharp appearance of BCS 3.

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optimum

- 5 Moderate; increased fat cover over ribs, generally only 12^{th} and 13^{th} ribs are individually distinguishable; tailhead full, but not rounded.
- 6 Good; back, ribs, and tailhead slightly rounded and spongy when palpated; slight fat deposition in brisket.

Fat

7 Fat; cow appears fleshy and carries fat over the back, tailhead, and brisket; ribs are not visible; area of vulva and external rectum contain moderate fat deposits; may have slight fat in udder.

- 8 Very fat; squared appearance due to excess fat over back, tailhead, and hindquarters; extreme fat deposition in brisket and throughout ribs; excessive fat around vulva and rectum, and within udder; mobility may begin to be restricted.
- 9 Obese; similar to BCS 8, but to a greater degree; majority of fat deposited in udder limits effective lactation. Under normal production systems cattle in this condition score are rare.