

Nutritional Management Opportunities for Veterinarians

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Abstract

Doc, my herd weaning percentage is 83%, my pounds weaned per exposed female is 431, my cost per pound of weaned calf is \$0.84, my total cost of production per cow is \$362, of which \$152.00 involves nutrition and \$16.50 goes toward veterinary practices. Debt is 20% of assets for the operation. Can you help me with a herd health plan? Would you rather work with this producer or the one who comes to you and says "I've got some cows - what's the best vaccine I otta givem? We have all worked with the latter and possibly some of the former. ***Have you ever stopped to question the quality of advice you give the latter when you know so little about his business?***

Improved decisions can be made both in nutrition and veterinary practice advice when both cattle performance and herd economic information is available to all involved. Conception rates, percent calf crop and pounds weaned per cow exposed are good measures of cattle performance. Cost per pound of calf weaned is very helpful. Total costs per cow, if possible broken down by pasture, supplemental feed, veterinary, etc. helps further. *Veterinarians would do well to encourage producers to conduct a SPA analysis and share this information with everyone involved with managing or advising the operation.*

Introduction

Veterinarians have great potential to influence beef producers in all aspects of their operations because of their frequent contact, frequent in comparison to other sources of information. In this paper I share experiences gained from working with herds in the Texas Beef Partnership in Extension Program (PEP) where Standard Performance Analysis (SPA) was conducted and the results shared with all advisors, extension nutrition and forage specialists, veterinarians, economists, etc. From these experiences, I realize it is hard to give good advice on nutrition if one knows nothing about the economic, or the herd production status, of an operation. I feel this is true of other advisory disciplines as well.

The nutrition program must meet the performance goals for all classes of cattle on the farm or ranch. Determining goals is a challenge since maximum performance is seldom the most profitable. Guidelines for the nutrient

requirements of cattle are available in beef text books, feed industry reports and state extension publications, but the *Nutrient Requirements of Beef Cattle* (most recent edition 1996) is the standard reference of most nutritionists.

Forage Quality

Development of the nutrition program should begin with an assessment of forages produced, both the quantity and nutrient content. Published values for nutrient contents are normally accurate enough for grains, protein sources and mineral supplements, but can be very misleading for forages. Since the kind and level of supplementation is based on forage nutrient content and the characteristics of the cattle being supplemented, mistakes in appraising either are quite costly. Ranchers commonly over estimate forage value resulting in under supplementation and poor cattle performance, though under estimation also occurs resulting in unnecessary supplementation and expense. Since hay can vary so much in nutrient content from cutting to cutting and pastures from month to month, average textbook values are not accurate enough for good management.

Protein and fiber analyses, from which to estimate energy values, of the actual forage that will be the foundation of the diet should be common practice on every farm and ranch. Fecal analysis, as a substitute for forage analysis in estimating forage quality in grazing systems, is being researched and may become practical for some measures.

Minerals

When beef herds are having breeding or health problems, and disease, along with protein and energy deficiency (expressed as poor body condition) have been ruled out as potential causes, analysis of forages and water for mineral content can be very useful in discovering the cause. Deficiencies of phosphorus, magnesium, copper, zinc and selenium, as well as excesses of potassium, iron, sulfur and molybdenum are frequently detected as the cause of problems.

Supplement Considerations

Often a supplement must be added to the basic forage to meet the nutrient requirements of the cattle.

The supplement must furnish those nutrients which are not provided by the forage or which cannot be obtained from stores in the animal's body. Considerable amounts of energy, in the form of fat, and vitamin A can be stored by the cow for later use, but the supply of protein and minerals from body stores is limited. Additionally, supplements should only be provided if the increase in performance will more than offset the cost of the supplement, or if it is necessary for humane treatment of the cattle.

Experiences with Beef PEP Demonstration Herds

This article summarizes some important considerations arising from experiences with the Beef PEP Demonstration herds.

- 1) Due to the great variation that exists between herds, in both cattle performance and costs of production, it is very hard to give good nutritional advice without access to records in both areas. According to SPA economic records, the cost of producing 100 lb of calf is \$55 for the top 25% of ranchers, \$73 for the second 25%, \$91 for the third 25% and \$138 for the lowest 25% of ranchers based on net income. On the performance side, pounds of calf weaned per exposed female varies from 200 to 600 lb in these same herds.
- 2) In order to be profitable, you simply must be a low cost producer, average or better. If your production is less than 350 lb per exposed female, there is likely opportunity for you to spend more money to increase production, which will decrease cost per unit of production. However, if your performance is over 575 lb of calf per exposed female, opportunity is probably greater for you to reduce input expenses while trying to hold production, or even allowing it to slip a bit.
- 3) Short grass, poor hay and thin cows should be warning signals. Low input expenses do not necessarily translate to low cost per pound of calf produced. Dramatic improvements were made in two Beef PEP study herds where forage availability was increased by about 30%, one by decreasing cows and one by obtaining more acres of grazing.
- 3) Research indicates adequate body condition is necessary for good reproduction. Target scores at calving should be 6 for heifers and 5.5 or greater for cows on a 1 to 9 scale. Experiences with the Beef PEP herds, as well as numerous other herds, indicate that body condition scoring is an excellent management tool, especially

when a summary of scores are kept for several years on a herd. Such a summary allows reasonable estimation of reproductive performance, and thus future income projection. In addition it can help separate out disease verses nutritional causes of reproductive failure as well as aiding in supplement selection. Fat cows can usually get by on high protein supplements while thin cows need protein- energy supplements fed in larger amounts.

- 4) Using forage analyses to build a forage composition data base for a ranch takes some of the guess work out of protein, energy and mineral supplementation. A nutritionist has tools to work with when the results of 15 to 30 samples are available over two or three years, some coming from pastures, some from hay and some from winter pastures if utilized. Protein, acid detergent fiber (to estimate energy), calcium, phosphorus, potassium, magnesium, sulfur, sodium, iron, manganese, zinc, copper and molybdenum are desirable. The extra cost of selenium analysis may be important in some areas. Without an analysis, protein supplements are often under fed as well as over fed, both increasing the cost per pound of calf produced. Many generally formulated mineral supplements may not get the job done if high iron, sulfur or molybdenum is present in the forages being consumed.
- 5) Lastly, blood samples and liver biopsies can be used to evaluate mineral problems if other measures such as forage analyses and visual hair appraisal suggest problems exist. Copper deficiency has been frequently observed. Selenium deficiency has not been as common, but was observed in some Beef PEP calves when checked by blood analyses during very hot, stressful August weather.

Other Points

Indicator variables

We don't sell vaccine titers to grocery stores to put in the meat case. What counts is the effect of vaccines on the cost per pound of beef produced. Vaccine titers may or may not be predictive of economic benefit in a given situation.

Advertising

Cattle don't perform on advertising claims. They perform based on protein, energy, vitamin and mineral intake, as influenced by feed additives. Both valid and highly exaggerated claims exist. The most economical response to supplementation comes from supplementing the first limiting nutrient, then the second, then the third, etc.

Supplement form

Form of supplements, containing the same nutrients, does not directly affect the performance of the cattle, e.g., meals, cubes, blocks, tubs, liquids, etc. Form does influence intake, waste and the potential to self-feed.

Costs

The cost that counts is the cost per pound of calf produced, not the cost of the supplement, feed additive or drug.

TDN/Protein ratios

The TDN/CP ratio required for various classes of cattle, based on their CP (crude protein) and TDN (total digestible nutrients) requirements, remains fairly constant at 5.5 to 6.9. Cattle perform very well on diets with lower ratios (5.5 down to 3.0, indicating excess protein relative to energy) but one would not buy protein supplements to lower the ratio to this extent as it would not be economical. If lower ratios occur normally in high quality forages, this is fine up to a point.

Great excesses of protein in the total diet of cattle (indicated by a TDN/CP ratio less than 3.0) can be detrimental to reproductive performance. Such ratios are frequently found in annual winter forages containing over 22% protein on a dry basis. Cattle grazing these low ratio forages have more metabolic problems, such as grass tetany, nitrate poisoning and bloat. Dry matter intake is likely lower than would be expected for such high quality forages. Decreased performance is more likely if the proportion of degradable protein (DIP) is high relative to total crude protein, such as exists with most high protein forages. More care needs to be given in the determination of amounts and timing of fertilizers normally used in the production of such forage.

Forages with high TDN/CP ratios (>9.0) are low in protein relative to their energy content and will be consumed at relative low levels (<1.7% of body weight). The addition of high protein (>30%) supplements to such

forages greatly improves performance, mainly by increasing forage intake with some improvement in digestibility. Forages with low ratios (< 5.0) tend to be high quality with more than 11% protein and over 55% TDN, consumed at relatively high levels (>2.3% of body weight) and supplements, while increasing the energy content of the total diet, tend to decrease forage intake and digestibility, the extent of the decrease depending on the amount of supplement and the quality of the forage. Supplements with ratios of 8.0 to 9.0, normally corn or sorghum grain, are appropriate where ratios are less than 5.0 in the forage. TDN/CP ratios of 9.0 to 5.0 represents a transitional range and results from supplementation are less predictable, but should follow general trends. Supplements with TDN/CP ratios around 3.0, mixtures of energy and protein supplements, are recommended for forages in this transitional range of quality.

Knowing the TDN/CP ratio of the forage and various supplements allows one to match forages and supplements to obtain a total diet with an acceptable ratio for the cattle being supplemented (a ratio normally less than 6.5 but above 3.0).

Summary

Improved decisions can be made in nutrition, in all aspects of management, when both cattle performance and herd economic information is available to all involved. Conception rates, percent calf crop and pounds weaned per cow exposed are good measures of cattle performance. Economically, cost per pound of calf weaned really helps to evaluate the herd status, compared to its ranking in the industry. Total costs per cow, if possible broken down by pasture, supplemental feed, veterinary, etc. helps further. Veterinarians should encourage producers to conduct a SPA analysis and share this information with everyone involved in managing or advising the operation.