EXTENSION ANIMAL SCIENCES AND INDUSTRY

# BEEF TIPS

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**Look in the September Issue of Beef Tips for Information on:**

**Planning Your Supplement Protein Needs for the 1996–97 Feeding Season**

## Harvesting Hay at Proper Maturity Can Reduce Feed Costs

Cost-cutting strategies are an indispensable ally to the beef producer through this dismal phase of the beef cycle. Since feed costs represent the lion's share of a beef producer's single largest variable expense, reducing the dependency and use of harvested forages by increasing the length of time cattle are grazing pasture or crop residues is a logical place to focus attention. However, unpredictable precipitation patterns and the seasonality of range and pasture nutrient quality necessitates harvesting and preserving some quantities of forage for future needs.

Producers should recognize the positive aspects of harvesting forages at the proper stage of maturity on out-of pocket supplement expenses. Attention to this detail will translate into significant supplemental cost savings during the feeding season. The following table lists the preferred growth stages/cutting dates of different forage crops for quality hay production.

*Dale Blasi, Extension Specialist, Livestock Production, South Central*

Preferred Growth Stages/Cutting Dates for Different Forage Crops for Hay

| Crop | Remarks |
|---|---|
| **Legumes** | |
| **Alfalfa** | |
| Established | First cutting should be based upon crown regrowth and subsequent cuttings on one-tenth bloom. |
| Newly established | Delay first cut on new stands from one-tenth to one-half bloom or when crown regrowth appears. |
| **Grasses** | |
| Native hay | Early July—southern Kansas; mid-July—northern Kansas |
| Smooth brome | Between early heading and full bloom (mid-May to June 1) |
| Tall fescue | Cut no later than mid-May when it starts to show a few heads. |
| **Cereals** | |
| Oats, Wheat, Triticale | Harvest for hay anytime up to milk stage. |
| **Summer Annuals** | |
| Sudan grass and Hybrid pearl millet | Harvest before heads emerge. |

# Proper Forage Sampling—Your Key to Obtaining an Accurate Analysis

> "Knowing the feeding value of harvested forage is a crucial component of feed savings."

## Introduction

Beef producers must maximize the use of grazed forages and crop residues to survive today's challenging beef market. They must also have sufficient quantities of harvested feeds on hand for unpredictable environmental conditions when forage supplies are low or when animal nutrient requirements are higher than what grazing alone can provide.

Knowing the feeding value of harvested forage is a crucial component of feed savings. It is important to submit a composited forage sample which is representative of the forage lot being analyzed. A forage lot consists of forage harvested from one field at the same cutting and maturity within a 48-hour period and usually contains less than 100 tons of hay. A forage lot should be similar for: type of forage, field (soil type), cutting date, maturity, variety, weed contamination, type of harvest equipment, weather during growth and harvest, and storage conditions.

Because it is not known if existing sampling recommendations sufficiently account for all of the potential variation in nutrient content that may exist in Kansas forages typically harvested as hay, a study was conducted to determine the extent of nutrient variation present in first and third cutting alfalfa, prairie and sorghum-sudan forage harvested in large round bales. Based on the estimates of nutrient variation, sample sizes were determined to achieve various degrees of precision and confidence intervals.

## Methods

Across each of the three counties, large round bales (n=25) from homogeneous lots that represented each forage and harvest condition were individually core sampled with a 24-inch Forageurs Corp. hay probe in two locations and submitted to a NFTA accredited commercial laboratory. Dry matter, crude protein, calcium, phosphorus and acid detergent fiber content were determined using traditional wet chemistry and near infrared spectrophotometry (NIRS) laboratory analyses. All samples were statistically analyzed to derive estimates of nutrient variation as affected by forage type, harvest condition and laboratory method employed.

## Results

Table 1 contains the recommended number of bales by forage type that are part of a well-defined forage lot to be subsampled and composited into one sample based on a desired degree of precision and confidence level for crude protein content. The precision estimates were computed as a portion of the raw measure, not as a fraction of the mean. For example, a forage lot of third cutting alfalfa estimated to average 20 percent crude protein would range from 19 to 21 with 1 percent precision, and 19.5 to 20.5 with .5 percent precision. Admittedly, the number of bales necessary to subsample is considerably higher than current university and commercial laboratory recommendations. However, the conservative approach undertaken with the statistical analysis used should ensure that intended precision and confidence levels are reached.

Users of this table may find that recommended sample sizes exceed or comprise a large proportion of the number of bales in the forage lot being sampled. Producers should subsample the recommended number of bales as long as the specified number in the table is less than 20 percent of the forage lot. If the recommended amount is greater than 20 percent, producers are advised to subsample 20 percent of the forage lot.

The recommended number of prairie and sorghum-sudan bales to subsample at a given precision and confidence level is approximately one-half the number of bales required for first and third cutting alfalfa hay. These results are anticipated since the ranges in crude protein content of both prairie and sorghum-sudan hays are typically smaller than those observed with alfalfa.

At a bare minimum, producers should request dry matter crude protein and acid detergent fiber to determine the feeding value of the submitted forage.

## Implications

Improper forage sampling technique affects profitability and productivity from two different perspectives: (1) A "false" high crude protein analysis which, in fact, is low will result in a potential crude protein deficiency and; (2) A "false" low crude protein analysis which, in fact, is high can result in excessive supplementation expenses. Table 2 contains the range and average crude protein content determined from 25 sorghum-sudan bales that were individually sampled at one county location. To demonstrate the potential implications of improper forage sampling, the minimum, maximum and average crude protein estimates were each used to individually augment the protein requirements for a spring-calving beef cow grazing winter native grass from November through mid-April. If crude protein require-

ments were still deficient with expected forage intake levels of the weathered native grass and sorghum-sudan hay, a commercial 38 percent protein supplement valued at $246/ton was included.

The results of this simulation suggest feed costs may vary by $40/cow when using a sorghum-sudan hay ranging from 6.2 to 11.9 percent in crude protein content. Stated another way, there is approximately $7 cost savings per 1 percent increase in crude protein content which emphasizes the importance of striving for production of quality forage. The first step towards efficient feed cost control is knowing the quality of the harvested hay used. The key to arriving there is submitting a forage sample that is representative of the forage used in the feeding program.


## Acknowledgement

Appreciation is extended to Peterson Laboratories, Inc., Hutchinson, Kansas, for graciously providing the NIRS and wet-lab analyses for this study.



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Table 1. Recommended Number of Large Round Bales to Subsample and Composite Based Upon Desired Degree of Precision and Confidence Interval for Crude Protein Content.

| Forage Type | Precision of Average Crude Protein Estimate, % | Confidence Interval 99% | 95% | 80% |
|---|---|---|---|---|
| 1st Cutting Alfalfa | ± 1 | 19 | 11 | 5 |
| | ± .5 | 76 | 44 | 19 |
| 3rd Cutting Alfalfa | ± 1 | 12 | 7 | 3 |
| | ± .5 | 47 | 27 | 12 |
| Prairie Hay | ± 1 | 4 | 2 | 1 |
| | ± .5 | 15 | 9 | 4 |
| Sorghum Sudan Hay | ± 1 | 7 | 4 | 2 |
| | ± .5 | 28 | 16 | 7 |

Table 2. Effect of Sorghum-Sudan Hay Protein Content on Beef Cow Winter Feed Costs.[a]

| Item | Crude Protein Content[b] Minimum | Average | Maximum |
|---|---|---|---|
| Nutrient: | | | |
| Crude Protein, % | 6.2 | 9.1 | 11.9 |
| Cow Feed Cost: | | | |
| Gestation Period | $51 | $42 | $26 |
| Lactation Period | $39 | $33 | $24 |
| Total Cost | $90 | $75 | $50 |

[a] Scenario: 1,150-pound cow, average body score, grazing native range (crude protein content = 3%) from late November through mid-April.
[b] Minimum, average and maximum crude protein content determined from 25 individually sampled sorghum-sudan bales arising from one lot.

# Steps to Adding Value

***(fifth in a five-part series of how we can add value to calves or products produced at a cow-calf operation.)***

## STEP 9. Avoid Discounts

One of the easiest ways of adding value is to avoid discounts. In the cattle industry, it's important that calves be dehorned, castrated, and marketed as healthy cattle. Avoiding sorts at the sale barn helps avoid $5 to 10/cwt discounts.

## STEP 10. Market, Don't Just Sell

The cow-calf industry has based many of its management practices on tradition, and marketing is certainly no exception. Typically, calves are weaned and taken directly to the sale barn. Not enough emphasis has been placed on trying to utilize management practices that might increase the value of these calves.

Even more unfortunate is the fact that many cow-calf producers do not follow how the buyer of their cattle has progressed from a feeding or health standpoint, or how the cattle sold once finished.

To effectively market, you need to know the value of your cattle, you need to understand the seasonality of the market, you need to have an idea of what your cattle are bringing by joining cattle marketing organizations, and you need to develop better promotion and marketing skills.

## Summary

As one looks at history, there is no question that how cattle producers survive the next few years will determine who stays in the business. Adding value to cattle will help you weather the next few years.

## Find Steps 1–8 to Adding Value in the Following Issues:

**December 1995**

1. Partial or Full-Retained Ownership of the Calf Crop
2. Adding Value to the Heifer Calf Portion of the Calf Crop

**February 1996**

3. Take Full Advantage of Marketing Cull Animals
4. Sell Higher Priced Products to Generate Cashflow and Replace With Cheaper Products

**March 1996**

5. Don't Overlook Alternative Income Sources at the Farm or Ranch
6. Look to Alliances for Opportunities

**May 1996**

7. Look for Ways to Add Value to Products Marketed
8. Utilize, Market Superior Genetics


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# Kansas Feedlot Performance and Feed Cost Summary*

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**April 1996 Closeout Information ****

| Sex/No. | Final Weight | Avg. Days on Feed | Avg. Daily Gain | Feed/Gain (Dry Basis) | % Death Loss | Avg. Cost of Gain/Cwt | Projected Cost of May-Placed Cattle |
|---|---|---|---|---|---|---|---|
| Steers: 21,123 | 1,183 | 164 (140–180) | 3.04 (2.80–3.27) | 6.11 (5.23–6.64) | 1.51 | $64.74 (55.17–74.81) | $74.17 (70.00–80.00) |
| Heifers: 16,213 | 1,079 | 162 (126–199) | 2.73 (2.45–3.15) | 6.39 (5.68–7.22) | 1.35 | $68.82 (65.07–75.60) | $76.17 (72.00–80.00) |

| Current Feed Inventory Costs: May 15 Avg. Prices | | Range | No. Yards |
|---|---|---|---|
| Corn | $ 4.66/bu | $ 3.98–5.25 | 7 |
| Milo | $ 7.65/cwt | $ 7.65–7.65 | 1 |
| Ground Alfalfa Hay | $91.36/ton | $83.00–105.00 | 6 |

*Appreciation is expressed to these Kansas Feedyards: Brookover Feed Yards, Brookover Ranch Feedyards, Decatur County Feed Yard, Fairleigh Feed Yards, Kearny County Feeders, Pawnee Valley Feeders, and Supreme Feeders.

**Closeout figures are the means of individual feedyard monthly averages and include feed, yardage, processing, medication, death loss and usually sold FOB the feedlot with a 4% pencil shrink. Interest charges are not normally included.




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