



Cattle Producer's Handbook

Nutrition Section

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Utilizing Crop Residue as a Feed Source

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Higher hay and grain prices often force cow-calf producers to search for lower cost feed alternatives in order to stretch existing hay and forage supplies. Grazing crop residues such as grain fields that have been irrigated after harvest or cornstalk residue is a frequent occurrence. Likewise, feeding baled cornstalks is becoming more commonplace. Utilizing crop residues can reduce feed costs; however, several factors should be considered.

Feed Value

Perhaps the greatest challenge in utilizing any crop residue as a feed source is the wide variation in nutrient content and digestibility. Sprouted grains are high in nutrient value although straw residue and plant density (number of sprouted plants per acre) can impact intake. On grazed corn residue, nutrient content declines with each day that cattle are in the field. Cattle will first seek out and consume any missed ears, spilled kernels, leaves, and cornhusks. They will then consume the more lignified stalks, which are of much lower nutrient value.

The nutrient value of baled cornstalks can vary greatly depending on field conditions and harvest methods. Some growers simply bale the windrow left from the combine. Others will swath all remaining cornstalks and then rake them into a larger windrow. Swathing and raking corn stalk residue will increase the tons per acre harvested but will also increase the amount of lignified stalks and dirt content of the bales. Table 1 shows the variation that existed in several different loads shipped to northeast Oregon in 2007.

Feed Comparisons

In order to place an appropriate value on crop residues, producers can make comparisons with more common forages or feedstuffs such as alfalfa or

Table 1. Baled corn residue analysis results.

	% DM	% CP*	% TDN*	NO ₃ -N (ppm)
1	85.8	3.7	53.4	N/A
2	82.1	4.5	52.5	1,270
3	84.6	5.1	54.3	1,560
4	77.8	5.2	49.8	750
5	84.8	3.9	55.2	705
Average	83.02	4.48	53.04	1,071

*Reported on a dry matter basis.

meadow hay. Crude protein and energy (TDN) should be the first comparisons made. It is easiest to compare on a cost per pound of nutrient basis. To make this comparison, multiply the quantity of the feedstuff by the percent of the nutrient in the feed. This will indicate the number of pounds of the actual nutrient in the feed.

Next, divide the price of the feedstuff by the number of pounds of the nutrient in the feed to get the price per pound of the nutrient. For example, alfalfa hay that is 17 percent crude protein and \$180/ton would cost about 53 cents per pound ($\text{\$/lb}$) of crude protein:

$$\frac{\$180}{2,000 \text{ lb} \times 17\%} = 529\text{\$/lb}$$

Next, the percentage content of each nutrient should be considered. How do those figures compare to each other and to the cow's actual nutrient needs? Table 2 shows those comparisons.

Moisture should also be considered and adjusted to accurately compare different feed sources. When the samples in Table 1 are adjusted for moisture to match alfalfa hay (89% DM), the price for \$55/ton baled corn residue becomes \$58.30/ton; \$85/ton baled corn residue is now \$91.10/ton.