

Feeding Straw to Beef Cattle

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Straw is a low quality feedstuff that can be utilized as an alternative to hay if properly supplemented with minerals, vitamins, and grain. Straw is best suited for dry pregnant cows because of their low nutrient requirements. Dry cows require about 52 to 55% TDN and 8% crude protein. Lactating cows require 58 to 60% TDN and 11% crude protein. Straw will require both supplemental TDN and crude protein. Straw has limited use in the diets of stocker calves or replacement heifers, and should be limited to 25% or less in the diets of growing cattle.

Nutrient content of various straws are listed in Table 1. Oat straw is the most palatable and highest quality straw. Rye straw is the least palatable and lowest quality straw. Straws are very low in protein and must either be ammoniated to increase the protein level or supplemented with high protein feedstuffs. It is recommended to have the straw analyzed for nutrient content prior to feeding.

Grinding straw and mixing with grain and/or by-product feedstuffs can increase the consumption of straw, but will not improve digestibility. Grinding and mixing with grain also ensures a uniform mixture and more equal distribution of feed among animals. Molasses can be added to the mix to help prevent sorting of grain from the straw. However, most producers do not have mixing equipment and must feed the supplement and straw separately. When doing this, make sure all animals can eat at the same time when feeding the supplement. Also, if a producer has higher quality hay available, alternate day feedings of straw and hay would ensure that all animals are getting some high quality forage.

Straw will need supplemental protein and energy for any class of animal. Average nutrient values of various feedstuffs are listed in Table 2. This is not a complete list of acceptable feeds, but these are widely available in Georgia. Additional feedstuffs may be utilized. Ask the local county extension agent for the feeding value of additional feedstuffs. Impaction, which can result in death, may occur when cattle are consuming low protein low digestible forages such as straw. Therefore, a high protein supplement feed such as whole cottonseed, corn gluten feed, distillers grains, wet brewers grains, and oilseed meals must be fed. Soybean or cottonseed meal can be mixed with a lower protein feed such as soybean hulls or corn in a mixture of two-thirds soybean hulls or corn to one-third oilseed meal. Supplements should be a minimum of 18% crude protein.

A dry cow should be allowed free-choice access to straw plus approximately 0.7% body weight of supplement per day. If a lactating cow is fed straw, the supplement rate should be increased to approximately 1.15% of body weight of supplement per day. When feeding straw to lactating cows, feeds such as cottonseed, corn gluten feed, distillers grains and brewers grains should be limited to 0.7% of body weight. For the additional supplement, use a mixture of two-thirds corn or soybean hulls to one-third oilseed meal. When using wet brewers grains, feed 4.3 times more per day compared to the other drier feeds to account for the high water content of wet brewers grains. For example, feeding wet brewers grains at 3.0% ($0.7 * 4.3 = 3\%$) of body weight would equal corn gluten feed fed at 0.7% of body weight. Cows should consume approximately 1.5% of body weight of straw per day. Closely monitor straw intake to ensure cows are eating adequate amounts. Waste may be significant when feeding straw and must be considered when estimating daily intake.

The supplemental feeds listed in Table 2 are low in calcium and high in phosphorus. Therefore, phosphorus should be removed from the mineral supplement when using these feeds at the suggested feeding levels. In addition, an ionophore such as Rumensin® or Bovatec® should be included in the mineral supplement.

Ammoniation of straw can increase the crude protein and TDN percentage of straw as well as increase dry matter intake of the straw. Ammoniation may improve the nutrient content to a level, in which no supplemental protein and energy is required for a dry cow. Assuming it costs \$25 per ton to ammoniate straw, feed costs per cow per day would be similar between feeding only ammoniated straw, or feeding untreated straw plus 0.65% of body weight of supplement that cost \$130 per ton. Therefore, if supplemental feed costs greater than \$130 per ton, then ammoniation would be a more economical route. If supplemental feed costs less than \$130 per ton, then untreated straw plus supplement would be the cheaper route. Ammoniation can be dangerous and you should seek help in finding someone that is experienced in ammoniation before attempting this practice. More information on ammoniating forages can be found in Leaflet #402 at: <http://pubs.caes.uga.edu/caespubs/pubcd/L402.htm>.

Table 1. Nutrient content of straws.

Straw	100 % Dry Matter Basis				
	Dry matter	TDN	Crude protein	Ca	P
Oat	90.0	47	4.5	0.27	0.10
Rye	88.0	41	3.6	0.22	0.08
Soybean	88.0	42	5.2	1.59	0.06
Wheat	90.0	43	3.6	0.19	0.09

Table 2. Nutrient content of feedstuffs.

Item	100 % Dry Matter Basis				
	Dry matter	TDN	Crude protein	Ca	P
Corn gluten feed	90	80	21.0	0.07	0.85
Distillers grains	88	88	29.5	0.16	0.80
Wet brewers grains	21	78	26.0	0.29	0.70
Whole cottonseed	92	96	23.9	0.16	0.62
Cottonseed meal	91	72	45.2	0.20	1.16
Soybean meal, 44%	90	84	49.9	0.40	0.71
Corn	88	88	9.0	0.03	0.31
Soybean hulls	91	80	11.7	0.53	0.18