

# SOYBEAN HULLS

**Stephen Boyles**  
OSU Extension Beef Specialist

Many fibrous feeds also have high energy values. The following are a list of fibrous feeds that offer potential for replacing hay or traditional grain sources. This article includes research that suggests these products may actually perform better than these numbers would indicate.

## Crude Protein, Fiber, and Energy Values of Selected Feedstuffs

Feed	CP <sup>a</sup> (%)	NDF <sup>b</sup> (%)	NEm <sup>c</sup> Mcal/lb	NE <sup>d</sup> Mcal/lb
Corn	9.8	10	1.02	0.70
Beet Pulp	9.7	54	0.79	0.52
Citrus Pulp	6.7	23	0.91	0.61
Corn Gluten Feed	25.6	45	0.92	0.62
Cottonseed, whole	23.0	44	1.09	0.77
Dried Brewers Grains	25.4	46	0.68	0.41
Soybean Hulls	12.1	67	0.65	0.39
Wheat middlings	18.4	37	0.73	0.45

<sup>a</sup>Crude Protein

<sup>b</sup>Neutral Detergent Fiber

<sup>c</sup>Net Energy Maintenance

<sup>d</sup>Net Energy Gain

**POTENTIAL USES:** Two areas of considerable potential for using the high-fiber by-product feeds, such as soybean hulls, corn gluten feed, and wheat midds, are to replace hay during the winter for cows or enhance performance of backgrounded calves being fed forage-based diets. Considerable research has been reported demonstrating the high nutritive value of these feedstuffs to ruminants.

Supplementation with these feeds results in an increased bacterial protein flow post-ruminally similar to ground corn and increased ruminal fiber digestion. Therefore, supplementing fibrous by-products, such as soybean hulls, should enhance forage utilization by ruminants.

**WHAT ARE SOYBEAN HULLS OR SOYHULLS:** Soybean hulls are a by-product of soybean processing for oil and meal production. Typically soybean hulls do not require special processing to feed. However, soybean hulls have urease (*an enzyme*) activity which can be a problem in rations containing urea. Heat treatment destroys the urease activity. Soybean hulls which have been heat treated are referred to as soybean mill run, soybean flakes or soybran flakes.

The fiber in soybean hulls is rapidly fermented and may contain substantial amounts of pectin. Soybean hulls are 67% NDF (neutral detergent fiber), but because of their small particle size, the effective NDF is much lower.

**REPLACING HAY:** Various researchers have conducted winter feeding experiments to determine the feasibility of using soybean hulls in lieu of hay as a winter feed. In one study, cows were grazed on stockpiled tall fescue and fed hay (tall fescue) ad-libitum when pasture became limiting. Feeding 4 pounds of soybean hulls from December through March saved approximately 625 pounds of hay per cow and less body weight loss (13 pounds) than feeding hay only (86 pounds). Estimating hay costs at \$80 per ton and soybean hull costs (delivered) at \$80 per ton, greater than \$6 per cow was saved by feeding soybean hulls.

**REPLACING CORN:** Other work has been done using soybean hulls as a replacement for corn in steers maintained on forage-based diets. In one study steers were maintained on tall fescue. One set of steers were fed 4 pounds of soybean hulls and another set was fed 4 pounds of corn while on grass. A third set of steers received no supplement. The steers gained similarly on soybean hulls and corn (2 pounds per day gain), with both being greater than the gain of steers that were not supplemented (1.5 pounds per day gain). Soybean hulls have been found to be equal to corn for rate and efficiency of gain when fed as a creep supplement to steer calves. However there are limits to soybean hulls being equal to corn. Feedlot steers fed corn or soybean hulls as the primary dietary energy source, had similar intakes and daily gains, but the soybean hull diet had poorer feed conversions than the corn diet. Soybean hulls appear to be more beneficial as a supplement for growing animals that are grazing or fed hay, compared with high energy, feedlot diets. Differences in feed costs would determine which is the most economical choice.

**METHOD OF FEEDING:** They are fed in whole, ground, or pelleted forms. One disadvantage of whole or ground soyhulls is that they are light weight and have a tendency to blow in commodity barns or when loading feed in windy conditions.

#### Soybean Hulls Nutritional Content (100% Dry Matter Basis)

Dry Matter	91%
Total Digestible Nutrients	78%
Crude Protein	11%
Crude Fat	2.2%
Crude Fiber	39.6%
Acid Detergent Fiber	50%
Calcium	.49%
Phosphorus	.18%