

Distillers Dried Grains with Solubles: Useful, But Not A Balanced Equine Feed

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Distillers dried grains with solubles (DDGS) have generated much interest as a feed ingredient as the ethanol industry has grown. The American Association of Feed Control Officials define DDGS as “the product obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain or grain mixture.” DDGS come from several different grains, corn being the most common in the U.S. Industry estimates suggest that over 22 million tons of DDGS will be produced in 2008 and will be used domestically and exported as a feed ingredient.

Due to processing, DDGS contain substantially less starch and sugar (Non-Structural Carbohydrates or NSC) than the base or starting grain (corn). Other nutrients may be concentrated as the starch and sugar are removed. Although the remaining nutrients are concentrated, the energy value (DE Mcal/kg) is lower.

The National Research Council's (NRC) nutritional values for corn and corn DDGS expressed on a DM basis are shown (Table 1). The NRC table does not show the change in NSC content or the variability. Equi-Analytical Laboratory data give an average NSC value on a DM basis for corn of 73.13% and for DDGS of 10.4%. The large drop in NSC demonstrates the amount of starch and sugar that is fermented to produce alcohol.

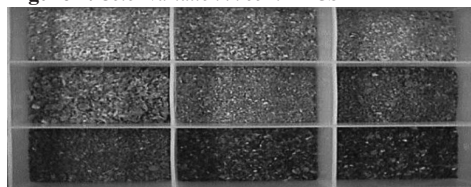
The most significant problem with DDGS is the inverted Ca:P ratio (recommended ratio for the mature horse is 2:1) (Table 1). The inverted Ca:P ratio, if not corrected, may contribute to bone development problems, particularly in young animals.

Another challenge is the variability of the product in nutrient content and value (Figure 1). Distiller plants use different processing methods and drying systems. The normal range for protein reported by Equi-Analytical is 26-34%. More importantly, there is a wide range in lysine digestibility depending on the level of heating during drying. There is also a wide range in aroma due to processing methods.

Table 1. The NRC nutritional values for corn and corn DDGS

Ingredient	DM %	CP% (protein)	Lysine %	DE Mcal/kg	NDF %	Fat %	Ash %	Ca %	P %
Corn	88.1	9.4	0.27	3.88	9.5	4.2	1.5	0.04	0.3
Corn DDGS	90.2	29.7	0.67	2.99	38.8	10.0	5.2	0.22	0.83

Figure 1. Color variation in corn DDGS



DDGS can be used effectively in horse feeds and in a wide range of livestock feeds to deliver balanced diets (feed companies test each batch of feed and compensate for variability with additional additives or products). If owners choose to purchase DDGS, they need to be aware of the inverted Ca:P ratio, the risk of nutrient variability and the potential presence of mycotoxins (from moldy corn) which may be detrimental to animals.