

Feeding Distillers Grain to Young Dairy Heifers

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Feeding distillers grain to livestock continues to be an important topic because of the widespread availability of distillers grain and cost of alternative feed grains. In the dairy industry, lactating cows are often the focus for feeding distillers grains, largely because of their demand for dietary protein. However, feeding distillers grain to dairy heifers is also a viable option.



Dried distillers grains with solubles

Distillers grain is a feed that contains fairly high concentrations of both energy and protein (Table 1). Distillers grain with solubles (DDGS) is somewhat higher in energy as a result of a higher fat content. Although the nutrient value of distillers grain is variable, it typically contains approximately three times

Nutrient	DDGS	Corn	Soybean meal
----- % of dry matter -----			
Crude protein	29.7	9.4	49.9
Fat	10.0	4.2	1.6
TDN	79.5	88.7	80.0
Neutral detergent fiber	38.8	9.5	14.9
Acid detergent fiber	19.7	3.4	10.0
Ash	5.2	1.5	6.6
Phosphorus	0.83	0.30	0.71
Sulfur	0.44	0.10	0.46

the protein, fat and mineral content of corn. This concentrating of nutrients occurs because of the removal of the starch during the fermentation process. The amount of protein and energy in distillers grain or DDGS will restrict the amount that can be fed to heifers. Feeding high levels of these feedstuffs to dairy heifers can be a challenge since the nutritional level will often exceed animal requirements and may

result in over-conditioned animals. Modifications to how distillers grain and especially DDGS are prepared may provide opportunities for better utilization in heifer diets.

The age at which dairy heifers can begin to be fed distillers grain is a question that commonly arises. At this time, studies have shown that feeding distillers grains as part of a calf starter at an inclusion rate of up to 20% of the starter dry matter will result in similar body weight gain and rumen development in dairy calves (Chestnut and Carr, 2007; Suarez-Mena et al., 2011).

At Purdue University, feeding distillers grain to post-weaned dairy heifers has been a recent focus in research studies. The studies have looked at including distillers in the diets of both feedlot and pasture raised heifers. The dairy heifers in these studies were between 4 to 5 months of age at the start of the studies.

In the first study, DDGS were included at 20% of dietary dry matter. The objective of the study was to determine growth performance of dairy heifers fed DDGS or reduced fat DDGS compared to a corn and soybean meal based diet. The dietary treatments included a control diet that contained corn and soybean meal, a diet containing 20% DDGS, and 2 additional diets that contained either 20% or 36% of reduced fat DDGS. The heifers were individually housed in feedlot pens. Over a period of 3 months, no differences were found in the weight, hip or wither heights, or feed efficiency of heifers fed either the DDGS or the reduced fat DDGS compared to heifers fed a corn and soybean based diet (Table 2).



Table 2. Performance of feedlot dairy heifers fed dried distillers grains with solubles. Heifers were fed either control (CON), 20% dried distillers grains (DDGS20), 20% reduced fat dried distillers grains (RFDGS20), or 36% reduced fat dried distillers grains (RFDGS36) diets for 12 weeks.

Item	Treatment				P Value
	CON	DDGS20	RFDGS20	RFDGS36	
Dry matter intake, lbs/d	14.3	14.1	14.6	14.2	0.70
Intake, % of BW	2.97	2.98	3.03	2.96	0.75
Body weight, lbs/d					
Initial	391.0	384.8	384.8	390.8	0.87
Final	562.1	549.7	563.3	559.7	0.49
Average daily gain, lbs/d	2.52	2.42	2.60	2.50	0.70

A second study assessed using DDGS as a supplement for grazing heifers and was also conducted for 12 weeks. The objective of this study was to compare performance of heifers fed DDGS to those fed soyhulls as a pasture supplement. In this study, small groups of 4 heifers were pastured in small paddocks using management intensive grazing (MIG). Throughout the study, the heifers were moved to a new paddock 2 times per week to provide them with additional forage. The heifers received one of two supplements: 1) DDGS and corn supplement, or 2) soybean hulls, corn and soybean meal supplement. The DDGS and soybean hulls were provided to the heifers at 0.9% of their body weight. In addition, the heifers were either grazed with or without goats in an effort to determine whether goats would improve pasture quality by reducing the presence of weed species. While goats did tend to reduce weed prevalence, the grazing strategy did not affect growth performance of heifers fed either of the supplements and conclusions from the supplement comparison are informative.

In the pasture supplementation study, heifers receiving the DDGS supplement had similar average daily gain (ADG), dry matter intake, and feed efficiency over the entire length of the study (Table 3). However, during the first 6 weeks of the grazing season, the heifers fed the DDGS supplement had 0.4 lb/d greater ADG than those receiving the soybean hull supplement.

Table 3. Growth performance of management-intensively grazed dairy heifers supplemented with either dried distillers grain with solubles (DDGS) or soybean hulls at 0.9% of their body weight for 12 weeks.

Item	DDGS	Soybean hulls	P Value
Starting weight, lbs/d	325.0	325.8	0.92
Final weight, lbs	423.6	416.9	0.37
Estimated dry matter intake, lbs/d ^a	15.4	15.0	0.14
Average daily gain, lbs/d	1.28	1.25	0.77
Feed efficiency, lbs gain to lbs fed	0.082	0.078	0.45

^aDry matter intake was determined by estimating pasture intake using a rising plate meter and adding it to the supplement consumed.

Although inclusion of DDGS in diets of growing dairy heifers have been found to support growth, the effects of feeding DDGS on nutrient excretion must also be considered. The high protein and phosphorus concentrations in DDGS can easily result in overfeeding and greater nutrient excretion. While not likely to be harmful to heifers at the mentioned rates, the excreted nutrients need to be handled properly to prevent accumulation in soils.

The economic costs and benefits of feeding distillers grain also need to be carefully considered by heifer raisers. Even though distillers grain can be included in heifer diets from the animal performance standpoint, distillers grain should only be included in heifer diets if they are an economical choice and provide at least the same economic value, based on nutrient concentrations, as other feeds available.

As studies have demonstrated that dairy heifers are able to achieve similar weight gain, skeletal growth and feed efficiency when fed diets containing distillers grain, feeding distillers grain to dairy heifers is an option for heifer raisers. The decision to feed distillers grain should ultimately be based on its price as compared to other feed sources.

For Further Reading:

Chestnut, A. B., and D. L. Carr. 2007. The performance of calves fed starter feeds containing distillers grains. *J. Dairy Sci.* 90(Suppl. 1):111. (Abstr.)

Suarez-Mena, F. X., T. M. Hill, A. J. Heinrichs, H. G. Bateman, J. M. Aldrich, and R. L. Schlotterbeck. 2011. Effects of including corn distillers dried grains with solubles in dairy calf feeds. *J. Dairy Sci.* 94:3037-3044.