

Texas Dairy Matters

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Reduced Fat Distillers Grains For Dairy Cattle

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As ethanol production has increased nationally, more co-products from that industry have found their way into dairy rations. Dried distillers grains with solubles or DDGS is frequently an economic feed source for energy and protein. Researchers have suggested that an upper limit of 20 to 30 % of ration dry matter could be provided from DDGS. Particularly at the upper feeding limits, milk fat depression was reported in some instances when the polyunsaturated fatty acid levels were elevated.

More recently, the ethanol industry has been refining their processes to remove half to two-thirds of the fat content of DDGS. This reduced fat DDGS or RFDDGS has recently been used in experimental dairy rations to determine if it could be fed at the higher inclusion rates without inducing milk fat depression.

Researchers at the University of Nebraska in conjunction with Penn State randomly assigned 20 cows to one of four dietary treatments for replicated 21-day periods in a 4 X 4 Latin Square design. The four dietary treatments on a dry matter basis were:

- 1) **CON** (Control) – 0 % DDGS
- 2) **DG** – 30% DDGS
- 3) **RFDG** – 30% RFDDGS
- 4) **RFDG + RIF** – 30% RFDG + 1.9% Rumen Inert Fat

The RFDG + RIF diet was formulated to provide supplemental energy from a rumen inert fat (commonly called bypass fat) without impacting the rumen microbial population. The forages in the experimental diets were alfalfa hay, alfalfa haylage, brome hay, and corn silage. The diet crude protein ranged from 18.4 to 18.8%. The forage NDF was 20% in the control diet, but only 16% in the three diets with DDGS; while total NDF ranged from 36.6% in the control diet to 39.6% in the RFDG diet.

The results of the experiment are shown in table 1. Dry matter intake was greater for cows fed either DG or RFDDGS ($P < 0.01$), which resulted in higher milk yield; however when milk yield was standardized to 3.5% FCM, only cows fed the RFDG + RIF produced more ($P < 0.08$) than

cows fed the control or DG diets. The actual fat yield was reduced for cows fed the conventional DG compared to the other three diets (P<0.01). Protein yield was increased for cows fed either form of DDGS (P<0.01).

Table 1: Effect of feeding conventional (DG) or reduced fat (RFDG) dried distillers grains with or without ruminally inert fat (RIF) on milk yield and composition compared to a control diet without distillers grains (Adapted from Ramirez-Ramirez, 2016).

Item	Dietary Treatment			
	CON	DG	RFDG	RFDG + RIF
DMI, lb/d	47.5 ^b	56.8 ^a	57.4 ^a	57.4 ^a
Milk Yield, lb/d	70.8 ^b	74.4 ^a	74.4 ^a	74.8 ^a
3.5% FCM, lb/d	73.0 ^b	72.2 ^b	75.5 ^{a, b}	77.0 ^a
Fat Yield, lb/d	2.60 ^a	2.44 ^b	2.68 ^a	2.75 ^a
Protein Yield, lb/d	2.2 ^b	2.42 ^a	2.35 ^a	2.33 ^a

From a milk yield standpoint it appears that feeding DDGS is beneficial; however when converted to a 3.5% FCM basis, only the RFDG + RIF diet increased returns by \$0.60/day (based on Feb. 2016 Statistical Uniform Price of \$15.02/cwt in the Southwest Order), however cows consumed 9 to 10 pounds more feed per day on the DDGS diets. In addition, the DDGS diets would have returned \$0.23 to \$0.38 more per day from the additional protein yield.

Producers considering whether to feed DDGS, should consider the effects of including DDGS on dry matter intake as well as milk, fat and protein yield before deciding when it's economical to feed DDGS and at what level to include it. And of course as feed, milk and milk component prices fluctuate the answer may change.