BEEF CATTLE RESEARCH UPDATE

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Impact of Low- and Medium-Fat Corn DDGS on Growth Performance of Feedlot Cattle

Corn dried distillers' grains plus solubles (DDGS) has a relatively high-oil content (10.7% ± 2.05%, DM basis).[1] This oil can be used to produce biodiesel, and as a result, ethanol producers are increasingly using enhanced oil extraction technologies. Thus, DDGS can have variable concentrations of oil. Feeding conventional corn DDGS (>10% fat; DM basis) to ruminants generally has a positive impact on growth performance, a finding which can partly be attributed to its higher energy content than cereal grains.[2]

Canadian research examined the effect of low fat corn DDGS (5.6% fat) or medium fat corn DDGS (8.3% fat) on feed intake and growth performance of feedlot steers fed corn silage–barley grain diets.[3] This study used 160 Angus crossbreed steers (initial body weight of 677 lb) during a combined growing (84 days) and finishing (112 days) trial. Steers were blocked by weight and randomly assigned to 1 of 16 pens (10 steers per pen) and each pen was allocated to 1 of 4 treatments (4 pens per treatment) consisting of two levels of fat: low fat DDGS and medium fat DDGS and two DDGS inclusion levels 10% or 20% (DM basis) during the growing period and 5% or 10% (DM basis) during finishing. In addition to the corn DDGS, the growing diets contained 60% corn silage, 5% supplement, 0.7% urea, and 24.3 or 15% dry rolled barley grain, respectively, for 10 and 20% DDGS diets (DM basis). After completion of the growing phase, steers were transitioned to high-grain diets over 21 days. The finishing diets contained 10% corn silage, 5% supplement, 0.35% urea, and 79.65 or 75% dry rolled barley grain, respectively, for 5 and 10% DDGS diets (DM basis). The calculated net energy for maintenance (NEm: 97.5 vs. 94.3 Mcal/cwt) and net energy for gain (NEg: 66.7 vs. 64.4 Mcal/cwt) values were 3.4% and 3.6% higher, respectively, for medium-fat DDGS than low-fat DDGS.

The effect of the inclusion level (10 vs. 20%) of the low- or medium fat DDGS on performance during the growing period is shown in Table 1. These researchers reported that feeding low fat DDGS diets increased dry matter intake (DMI: 17.3 vs. 16.5 lb/day, P = 0.002) of steers as compared with the medium fat DDGS diets. In addition, average daily gain (ADG) of steers fed the low fat DDGS was greater than those fed the medium fat DDGS (3.25 vs. 3.10 lb/day, P = 0.03). Steers offered 20% DDGS diets tended to have higher ADG (P = 0.06) compared with those fed 10% DDGS diets (3.24 vs. 3.11 lb/day). They also noted that the increased ADG in response to low fat DDGS in the growing phase was a result of increased DMI as feed efficiency was not improved (P = 0.86).

Table 1. Effect of inclusion level (10 or 20%) of low- or medium-fat DDGS (LO-DDGS or MO-DDGS) on performance of growing feedlot steers.

	LO-DDGS		MO-DDGS		P-value	
Item	10%	20%	10%	20%	DDGS	Level
Initial weight, lb	648	648	653	653	0.42	0.98
Final weight, lb	915	933	915	917	0.37	0.31
DMI, lb	16.98	17.64	16.54	16.54	<0.01	0.13
ADG, lb	3.15	3.35	3.06	3.13	0.03	0.06
Gain:Feed	0.1855	0.1905	0.1870	0.1877	0.86	0.42

The effect of the inclusion level (5 vs. 10%) of the low- or medium fat DDGS on performance during the finishing period is shown in Table 2. During finishing, DMI and ADG were not affected by DDGS type or inclusion level (P > 0.10). However, feeding medium fat DDGS to finishing steers improved gain efficiency by 5.6% as compared with low fat DDGS (0.170 vs. 0.161 Gain:Feed, P = 0.03). This result is similar to that reported in University of Nebraska research that evaluated the performance of

yearling feedlot steers fed normal-fat wet distillers grains plus solubles (WDGS: 12.9% fat) or low-fat WDSG (6.7% fat) during finishing.[4] In this study, WDGS was added at 35% of the diet DM, replacing corn (1:1 ratio of dry-rolled corn and high-moisture corn, DM basis). In this trial, feed efficiency tended be improved by 8.5% (P = 0.12) in cattle fed the normal-fat WDGS vs. the low-fat WDGS.

Table 2. Effect of inclusion level (5 or 10%) of low- or medium-oil DDGS (LO-DDGS or MO-DDGS) on performance of finishing feedlot steers.

	LO-DDGS		MO-DDGS		P-value	
Item	5%	10%	5%	10%	DDGS	Level
Initial weight, lb	1003	1008	986	1001	0.36	0.44
Final weight, lb	1466	1473	1469	1477	0.71	0.50
DMI, lb	25.36	25.80	24.26	25.14	0.11	0.24
ADG, lb	4.12	4.19	4.15	4.23	0.71	0.50
Gain:Feed	0.1613	0.1615	0.1720	0.1689	0.03	0.99

These authors concluded that DDGSs with lower fat content have higher feed value in growing diets, whereas, DDGSs with higher fat content have greater feed value in finishing diets.

LITERATURE CITED

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