BEEF CATTLE RESEARCH UPDATE

Britt Hicks, Ph.D.
Area Extension Livestock Specialist
Oklahoma Panhandle Research & Extension Center

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Effect of Feeding Frequency on Feedlot Steer Performance

In most large feedlots, cattle are fed more than once per day. Feeding cattle more often assures freshness of feed, may reduce the magnitude of feeding errors, may reduce overeating, and may improve performance since feed delivery stimulates cattle to eat. Recent Colorado State University research evaluated the effects of feeding frequency on the performance and carcass characterizes of feedlot steers.[1] In this study, crossbred yearling steers (700 lb initial weight) were fed once a day starting at 8:00 am, twice daily (fed 60% of diet starting at 7:30 am and 40% starting at 1:00 pm), or three times daily (fed 34% of diet stating at 7:00 am, 33% starting at 10:00 am, and 33% staring at 2:00 pm). Feeding three times per day increased average daily gains and dry matter intake compared to once or twice per day feeding (Table 1). Feed efficiency was similar for all three treatments. Feeding three times daily also increased hot carcass weight. No differences between treatments were noticed for USDA quality or yield grades. Steers fed three times daily had a higher percentage of abscessed livers compared to the other treatments (9, 4.1, and 16%, respectively, for once, twice or three times per day feeding). These researchers concluded that increased feeding frequencies may improve performance. However, if properly managed, once per day feeding may result in greater profitability due to reduced labor and equipment operation cost.

Table 1. Effects of feeding frequency on feedlot steer performance.

	Feeding Frequency		
	Once Daily	Twice Daily	Three Times Daily
Initial weight, lb	698.6	702.0	700.7
Final weight, lb	1304.5	1305.4	1329.8
Daily Gain, lb	3.60	3.61	3.76
Dry Matter Intake, lb	20.33	20.39	20.27
Feed/Gain	5.65	5.65	5.66
Carcass Weight, lb	796.5	793.6	815.9
Dressing Percentage	61.0	60.8	61.4

Dried Distiller's Grains with Solubles for Finishing Cattle

As the U.S. ethanol industry continues to expand, the availability of by-products generated from milling processes will increase. Dried distiller's grains with solubles (DDGS) are currently available in the Oklahoma Panhandle through ADM at Optima. Recent University of Nebraska research evaluated increasing levels of DDGS in dry rolled corn based feedlot diets.[2] Crossbred steer calves (676 lb initial weight) were fed diets with 0, 10, 20, 30, or 40% DDGS (dry matter basis). The control diet contained 79.5% dry rolled corn. This data showed that DDGS improved gains and feed efficiency at all levels with optimal performance occurring with 20% DDGS (Figure 1). Feeding DDGS had no effect on any carcass characteristics.

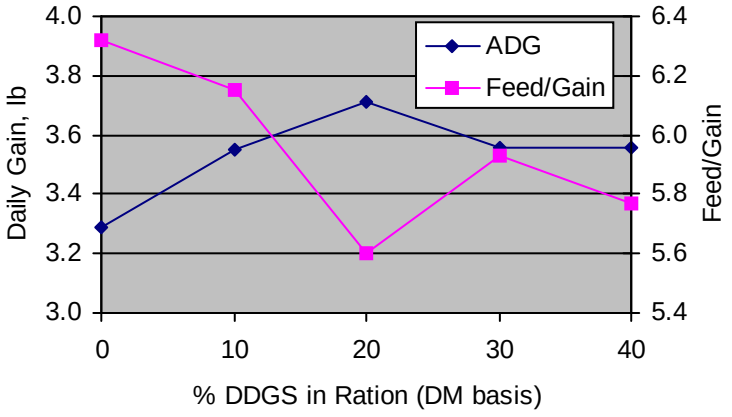

Figure 1. The effect of DDGS level on finishing performance. (Source: Buckner et al., 2007)

Recent Kansas State University research evaluated increasing levels of DDGS fed in steam-flaked corn based feedlot diets.[3] Crossbred yearling heifers (728 lb initial weight) were fed 0, 15, 30, 45, 60, or 75% DDGS (dry matter basis). These researchers reported that dry matter intakes were similar for all levels of DDGS. However, daily gain was greatest when 15% DDGS was fed and feed efficiency improved as levels of DDGS increased from 0 to 75%. Heifers fed 30% DDGS performed similar to the control heifers. Carcasses grading USDA choice or better decreased with increasing levels of DDGS. However, meat tenderness improved as the level of DDGS increased in the diet, while juiciness and flavor remained unchanged. In summary, cattle performance was maximized at 15% DDGS and as much as 30% DDGS can be fed without decreasing performance. In addition, meat tenderness appeared to be improved with DDSG without any adverse affects on juiciness, flavor, or retail display life.

In conclusion, these recent trials suggest that higher levels of DDGS can be used in dry rolled corn diets than in steam-flaked corn diets. The optimum level of DDGS in stream flaked corn diets is probably around 15%. Similarly, recent Nebraska research has suggested that the optimum level of wet distiller's grains with solubles (WDGS) in a dry rolled corn diet is 40% as compared to 15% in a steam-flaked corn diet.[4] Kansas State University research[5] and Texas Tech University research[6] have suggested that feeding WDSG in steam-flaked corn diets may actually decrease feedlot performance.

Due to the construction of ethanol plants in both Garden City and Liberal, KS, distiller's grains will soon be available to feedyards in the Oklahoma Panhandle. At this time, Oklahoma State University, Oklahoma Panhandle State University, and Hitch Enterprises are jointly conducting a feedlot trial at the Oklahoma Panhandle Research and Extension Center in Goodwell evaluating the use of distiller's grains in steam-flaked corn based diets (trial started in May). The following feed treatments (dry matter basis) are being evaluated: 1) steam-flaked corn control diet (84.5% corn, 8% alfalfa, 7.5% supplement), 2) 10% DDGS, 3) 10% WDGS, 4) 20% WDGS, and 5) 30% WDGS. In addition to the standard feedlot performance data and carcass data, strip loins will be collected at slaughter and shipped to the OSU meat lab in Stillwater for further analysis (fatty acid profile, simulated retail display, shear force, and taste panel). The WDGS came from the ethanol plant in Oakley, KS and is being stored in an ag bag.

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[3] Depenbusch, B. E., C. M. Gordon, and J. S. Drouillard. 2007. Dried corn distiller's grain with solubles: How much is too much? Plains Nutrition Council Spring Conference Pub. No. AREC 07-20:91 (Abstr.), Texas A&M Univ. Agric. and Ext. Cente, Amarillo.

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[5] May, M. L., J. S. Drouillard, M. J. Quinn, and C. E. Walker. 2007. Wet distiller's grains with solubles in beef finishing diets comprised of steam-flaked or dry-rolled corn. Kansas State Univ. Beef Cattle Research 2007 Report of Progress 978:57-59.

[6] Cole, N. A., M. L. Galyean, J. Drouillard, L. W. Greene, F. T. McCollum, P. J. Defoor, and C. R. Richardson. 2006. Recent research with distiller's grains and corn milling byproducts - southern plains. In: Plains Nutrition Council Spring Conference, San Antonio, TX. p 24-39.