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Effect of adding fat to feedlot rations

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Abstract

Fat is added to commercial feedlot rations as a concentrated energy source and to reduce dustiness and wear of feed processing machinery. We added fat at varying levels (0 to 6% of the ration) to study effects from fat and the influence of a surface-active additive. Two hundred 700-pound steers were allotted to 40 pens of 5 each all fed 135 days on the rations show in Table 12, according to the schedule shown in Table 13.

Keywords

Cattlemen's Day, 1971; Report of progress (Kansas State University. Agricultural Experiment Station); 546; Beef; Fat; Feedlot ration; Energy

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Effect of Adding Fat to Feedlot Rations

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Fat is added to commercial feedlot rations as a concentrated energy source and to reduce dustiness and wear of feed processing machinery. We added fat[1] at varying levels (0 to 6% of the ration) to study effects from fat and the influence of a surface-active additive.

Two hundred 700-pound steers were allotted to 40 pens of 5 each and fed 135 days on the rations shown in Table 12, according to the schedule shown in Table 13.

Results

Cattle performance and carcass characteristics are shown in Table 14. Neither the different levels of fat nor the additive significantly affected rate of gain independently. However, their interaction was statistically significant, with highest gains from either the 2% fat diet with the surface-active additive or the 4% fat diet without the additive.

Feed efficiency was improved by both the fat and the additive. In general, efficiency improved at a lower fat level with the additive than without it.

Improved feed efficiency should result from fat added to a diet, because one pound of fat furnishes about 2.25 times as much energy as one pound of carbohydrate. Fat is not likely to increase gain, because ruminants appear to have an "appetite thermostat" that limits them to a fairly constant energy intake. Thus, animals on a high fat diet eat less feed.

Cattle receiving fat had higher quality grades, (but not significantly so), than those receiving no fat. Yield grades of cattle fed no fat were generally lower (indicating higher cutability). Differences were quite small. There were no significant differences in fat covering measured at the twelfth rib. Kidney knob percentages were similar for all treatments, except for higher percentages on cattle receiving the additive and 6% fat.

The data show that up to 6% fat can be added in practical feedlot rations (based on steam-flaked sorghum grain) without reducing gains or carcass cutability. Feed efficiency will improve with added fat.

Fat can be economically used in finishing rations when it costs less per megacalorie of NEm+p than do other ration ingredients.

[1] HEF, Proctor and Gamble Company, Cincinnatti, Ohio

Table 12 Composition of Rations Used to Test Fat and Surface-active Additives[a] in Beef Finishing Rations

Ration designation	% of ration											
	1	2A	2B	3A	3B	3C	3D	4A	4B	4C	4D	4E
Silage (2/3 corn, 1/3 sorghum)	60	51	51	36	36	36	36	18	18	18	18	18
Dehy. alfalfa pellets	16	13	13	12	12	12	12	10	10	10	10	10
Steam flaked sorghum grain	20	32	30	48	46	45	44	68	66	65	64	62
Protein supplement[b]	4	4	4	4	4	4	4	4	4	4	4	4
Fat	0	0	2	0	2	3	4	0	2	3	4	6

[a]Half the lots on each ration received the surface-active additive.

[b]72% soybean meal, 10% urea, 5.74% dicalcium phosphate, 10.4% ground limestone, 1% trace mineral mix, 30000m. I.U./lb. vitamin A, 70 mg/lb. aureomycin, 10 mg/lb. diethylstilbesterol.

Table 13. Dates and Length of Time the Respective Rations Were Fed

Lot Numbers	July 6-July 27 (21 days)	July 28-Augs. 17 (21 days)	Aug. 18-Sept. 7 (21 days)	Sept. 8-Nov. 17 (72 days)
		Ration Designations		
1, 20[a]	1	2A	3A	4A
2, 21	"	"	"	"
3, 23	"	"	"	"
4, 24	"	"	"	"
5, 25	"	"	"	4B
6, 26	"	"	3B	"
7, 27	"	"	"	"
8, 28	"	"	"	"
9, 29	"	"	"	4C
10, 30	"	"	"	"
11, 31	"	2B	3C	"
12, 32	"	"	"	"
13, 33	"	"	"	4D
14, 34	"	"	"	"
15, 35	"	"	"	"
16, 36	"	"	3D	"
17, 37	"	"	"	4E
18, 38	"	"	"	"
19, 39	"	"	"	"
20, 40	"	"	"	"

[a]Pens 1-20, no additive; Pens 21-40, additive.

Table 14. Animal Performance and Carcass Characteristics

	No additive					Additive				
Fat level	No fat	2%fat	3% fat	4% fat	6% fat	no fat	2% fat	3% fat	4% fat	6% fat
Ration last 72 days[a]	4A	4B	4C	4D	4E	4A	4B	4C	4D	4E
Daily gain, lbs.	2.60	2.47	2.73	2.80	2.67	2.58	2.89	2.58	2.58	2.72
Feed/lbs. gain	9.30	9.72	9.47	8.40	8.55	9.06	8.68	8.80	8.77	8.57
Quality grade[b]	18.0	18.4	18.7	18.3	18.6	17.8	18.7	18.5	18.1	18.3
Yield grade[c]	2.9	3.1	3.0	3.3	3.2	2.9	3.0	3.3	3.1	3.1
Fat, 13th rib, in.	.51	.51	.52	.56	.58	.49	.47	.53	.52	.51
% kidney knob	2.6	2.9	2.7	2.9	2.9	2.6	2.7	2.7	2.6	3.3

[a]Data are based on total 135 day perfromance. See tables 12 and 13 for rations fed the 1st 63 days.

[b]20 = average choice, 17 = average good.

[c]Yield or cutability is measured on a scale from 1 to 5, with 1 the most desirable.