

Development of a Systems Analysis Model for Lean Beef Production

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To meet the demand for leaner beef, management systems which most efficiently produce lean beef of acceptable quality must be identified. The objective of this research is to analyze production data from different management systems to determine the most efficient procedures for the production of lean beef. Ration composition, feedlot performance, carcass characteristics and breed group data were obtained from 1,972 head of cattle used in nutrition trials at the Panhandle State University at Goodwell, Oklahoma, and Oklahoma State University, Stillwater, Oklahoma.

Five identifiable breed groups, ration protein levels of 9 to 13 percent, concentrate levels of 25 to 95 percent and feeding periods of 112 to 196 days illustrate the diversity of trials. Some trials utilized feed additives (monensin), non-protein nitrogen and cement dust. In addition, implants (ralgro or Synovex) were administered to some animals both before and during the trials. Feed consumption and gain data were recorded at regular intervals throughout each feeding trial.

Initial and final weights, rib-eye area, fat thickness, marbling score, carcass quality grades, carcass cutability and yield grade are presented by breed group in Table 1. Among the identifiable breed groups, mean initial weights were highest for the Exotic \times Exotic crossbred cattle while weights for other groups were similar. Further analyses of these and other data sets will be used to identify those variables (i.e. breed group, initial weight, days on feed, type of ration, etc.) most closely related to economically important carcass characteristics, including dressing percentage, carcass quality grade and carcass cutability.

Table 1. Means and standard deviations of performance traits from feedlot cattle

Breed group	No.	Initial weight lb	Ending weight lb	Fat th. inches	Ribeye area sq. in.	Cut-ability %	Yield grade	Marbling score ¹	Quality grade
British	661	632	1083	.60	11.9	48.9	3.5	14.4	Ch ⁻
SD ²		86	92	.19	1.2	1.7		3.0	
British × British	660	612	1101	.59	12.5	49.4	3.3	14.6	Ch ⁻
SD		121	49	.20	1.3	1.7		3.0	
British × Exotic	346	621	1114	.48	13.0	50.5	2.8	13.3	Ch ⁻
SD		100	94	.18	1.2	1.7		2.9	
British × Brahman	154	614	1041	.32	12.8	51.8	2.2	10.7	Gd
SD		47	99	.15	1.3	1.7		2.2	
Exotic × Exotic	141	682	1109	.49	12.4	50.2	2.9	12.8	Ch ⁻
SD		69	99	.16	1.4	1.5		2.6	
Unknown	10	692	1112	.36	13.5	51.4	2.4	11.9	Gd +
SD		61	89	.18	1.1	2.0		2.6	

¹Slight - is 10, Slight is 11, Slight + is 12, Small - is 13, Small is 14 and Small + is 15.

²Standard deviation.