BEEF CATTLE RESEARCH UPDATE

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Sorting Strategies for Marketing Feedlot Cattle

The number of feedlot cattle marketed using value-based pricing grids has increased steadily during the past several years. The premise that value-based marketing provides premiums and discounts for cattle that fit within a desired set of specifications suggests that profitability can be improved by marketing animals at an ideal time. Currently, most feedlot cattle are marketed as a pen prior to the time that discounts for overweight carcasses or excessively fat carcasses (yield grade 4 or greater) are projected to be excessive. Nebraska research from 2002[1] suggested that feeding pens of cattle for longer periods of time may improve profitability (due to increased lbs sold) until discounts are received for 10 to 15% of the cattle in a pen (for heavyweight carcasses and YG 4s). It is difficult to know when to market a pen of cattle because of the tremendous animal variation that can occur within a pen. Recent Nebraska research[2] evaluated three sorting strategies to determine the effects of sorting on performance, carcass characteristics, variability, and profitability in a long yearling beef production system utilizing ranch source calves.

In each year of a 2-year study, 160 English-cross steers were used (initial weights of 526 lb in year 1 and 550 lb in year 2). In each year, steers were weaned in the fall, backgrounded during the winter on corn residue (December to mid-February) followed by ammoniated wheat straw (thru mid-April), and grazed on smooth bromegrass pasture (mid-April thru mid-May) followed by warm season native range prior to entering the feedlot in the fall. The following four treatments were evaluated: 1) Sorted by pre-grazing body weight (PST), 2) Sorted by body weight entering the feedlot (FDL), 3) Sorted by body weight and ultrasound-measured 12th rib fat thickness at the end of the feeding period (IND), and 4) Not sorted, serving as controls (UNS). Each treatment consisted of two replicates. Each replicate in the PST and FDL treatments were sorted into heavy and light halves, whereas IND steers were sorted as individuals. The heavy PST steers were placed on feed in early July and the light group was placed on feed in late August along with the other treatment groups. All cattle were marketed based on ultrasound-measured 12th rib fat thickness. The PST treatment was marketed in two groups when 12th rib fat thickness averaged 0.45 inches for each group. The heavy FDL steers were marketed when fat thickness averaged 0.4 inches to avoid overweight carcasses and the light group was marketed when fat thickness averaged 0.5 inches to allow them to gain additional carcass weight. The IND steers were marketed as individuals in 4 kill dates in year 1 and 5 kill dates in year 2 when animals reached 0.45 inches fat thickness or 1500 lb body weight (4% shrink). The UNS steers were marketed as a group when fat thickness averaged 0.45 inches.

Cattle sorted prior to grazing weighed less entering the feedlot because the heavy half of the steers grazed fewer days. As a result, the PST steers consumed less feed and gained slower than the other treatments. No other performance differences between treatments were observed. Cattle receiving PST sorting had greater marbling scores (data adjusted to common fat thickness) than cattle in the other treatments. These researchers speculated that this is probably due to additional day on feed (about 25 days) required by steers removed from pasture midway though the summer (heavy group). No other treatment differences in carcass characteristics were noted. The PST steers consistently had less variability in weight entering the feedlot compared to other treatments. Although not different from FDL steers, PST steers did have less variation in carcass weight compared to UNS or IND steers when data were adjusted to a common fat thickness. In addition, the FDL steers tended to have less variation in carcass weight than UNS and IND steers. No differences in profitability were found whether marketing would have been on a live or a value basis (carcass grid).

In summary, no sorting strategy increased carcass weight, reduced discounts for overweight carcasses or YG4s, or improved profitability compared to not sorting. These researchers reported that few discounts were received by any treatment suggesting that all cattle could have been fed longer to gain additional weight and marbling. In addition, sorting the cattle into more than two marketing groups may have altered the results. Variation in carcass weight was decreased by PST and FDL suggesting that sorting improved uniformity of cattle marketed.

How Long Should a Preconditioning Program Be?

A recent summary of steers enrolled in the New Mexico Ranch to rail Program[3] (834 steers) from 2001 to 2004 was used to evaluate the impact of preconditioning duration on feedlot performance, carcass characteristics, and profitability. In this summary, the preconditioning duration (number of days from weaning until entry into the feedlot) was determined from standardized background information surveys completed by participants in the program. Steers were classified into one of four categories based on the duration of preconditioning: 0 to 20 days, 21 to 40 days, 41 to 60 days, and 61 days or more. These researchers standardized initial calf value market, carcass value grid, and unit feed values across years to remove market variation. Ultrasound was utilized to assign a marketing date for estimated maximum profit for each steer.

The results of this summary are shown in Table 1. Steers preconditioned 41 to 60 days had the highest average daily gain of 3.25 lb/day followed by steers preconditioned 21 to 40 days (3.17 lb/day), 61 days or more (2.97 lb/day), and 0 to 20 days (2.95 lb/day). Marbling scores increased as preconditioning duration increased, while fat thickness and calculated yield grade peaked at 41 to 60 days. Net income per head increased as preconditioning duration increased, with minimal change among steers preconditioned longer than 41 to 60 days. Net income was -$41.66, -$20.02, $2.23, and $4.00 per head, for steers preconditioned for 0 to 20 days, 21 to 40 days, 41 to 60 days, and 61 days or more, respectively.

This summary indicates that preconditioning durations in excess of 41 days yield increased profitability. When financial risk associated with time is considered, optimum preconditioning duration was achieved when steers were preconditioned 41 to 60 days. These results support the commonly practiced VAC 45 program which requires calves to be preconditioned a minimum of 45 days before leaving the ranch. Data collected at Superior Livestock Auction video sales from 1995 through 2004[4] showed that buyers will pay a greater premium for VAC 45 calves than VAC 34 calves compared to non-preconditioned calves. During this 10 year period, the premium paid for VAC 45 or VAC-34 calves averaged $4.37 or $1.91 per cwt, respectively.

Table 1. Impact of preconditioning duration on feedlot performance, carcass characteristics and profitability of New Mexico Ranch to Rail steers.

	Preconditioning Duration (days)				Contrasts[a]		
Item	0 to 20	21 to 40	41 to 60	61 +	L	Q	C
No. of steers	137	260	286	131			
Initial Weight, lb	582	611	575	607	0.09	0.60	<0.01
Days on Feed	196	191	187	199	0.08	0.01	0.84
Daily Gain, lb	2.95	3.17	3.25	2.97	0.24	<0.01	0.58
Carcass Weight, lb	748	782	759	780	0.06	0.25	<0.01
Marbling Score[b]	467	480	480	495	<0.01	0.19	0.32
Ribeye Area, in	13.7	13.8	13.6	13.7	0.95	0.52	0.12
Backfat	0.43	0.46	0.48	0.46	0.81	0.01	0.79
Yield Grade	2.46	2.62	2.66	2.63	0.30	<0.01	0.49
Medicine Cost, $	6.06	8.27	9.05	5.43	0.23	0.05	0.76
Cost of gain, $/cwt	66.00	56.00	57.00	60.00	0.96	0.05	0.27
Total Feed Cost, $	302.40	314.30	294.10	336.3	<0.01	0.17	<0.01
Net Income, $	-41.66	-20.02	2.23	4.00	0.09	0.03	0.75

[a]L = Linear, Q = Quadratic, C = Cubic

[b]Marbling Score: small 00 = 500

[1] Feuz, D. 2002. A simulated economic analysis of altering days on feed and marketing cattle on specific value-based pricing grids. Nebraska Beef Cattle Rep. MP 79-A:39.

[2] MacDonald, J. C., T. J. Klopfenstein, G. E. Erickson, C. N. Macken, J. D. Folmer, and M. P. Blackford. 2006. Sorting strategies for long yearling cattle grown in an extensive forage utilization beef production system Prof. Anim. Sci. 22:225-235.

[3] Waggoner, J. W., C. P. Mathis, C. A. Löest, J. E. Sawyer, and F. T. McCollum, III. 2005. Preconditioning duration affects feedlot performance, carcass characteristics and profitability of New Mexico ranch to rail steers. 2005 Cattle Growers' Short Course Proc. New Mexico State Univ. p. 78-80.

[4] King, M.E. and J.T. Seeger. 2005. Ten-year trends at Superior Livestock Auction: Calves in value-added health programs consistently receive higher prices. Pfizer Animal Health Tech. Bull. SVC05002. Pfizer Animal Health, New York, NY. Available: http://www.selectvac.com/images/SV_2005_01.pdf