

FINISHING FLORIDA CROSSBRED STEERS FOR TENDER TRIM BEEF -- WHITE FEEDLOT TRIAL

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SUMMARY

One hundred eleven crossbred steers, variable in weight, age, background and breeding were used in a feeding trial wherein the "topping out" procedure was used in an effort to maximize the proportion of correctly finished (Tender Trim or Choice, yield grade 3 or better) carcasses produced. The relationship of frame size, muscling, condition and temperament of feeder steers with feedlot performance and carcass characteristics was also studied. Gains were sub-standard for about one-fourth of the steers but excellent for the rest. "Topping out" for slaughter prevented a costly overfinishing of the first group killed and thereby contributed to maximizing the proportion of properly finished carcasses. Only nine carcasses (yield grades 4 or 5) were excessively finished. Sixty-three percent of the carcasses produced were considered very marketable, the 11 percent choice plus the 52 percent qualifying for Tender Trim. Large frame steers gained faster than medium frame steers, tended to have larger ribeyes, less fat over the ribeye and lower yield grade (meatier). Heavy and medium muscle steers gained equally well in the feedlot and provided carcasses similar in quality and meatiness attributes. Condition score of the feeder steers was positively associated with quality grade, fat cover and yield grade of carcasses produced. There was a tendency for steers with the poorer temperament to have a higher proportion of lower quality grade carcasses.

INTRODUCTION

There are many factors that influence the feedlot performance of feeder cattle and subsequent carcass quality and meatiness characteristics. Feedlot managers make every effort to pen animals into uniform lots, taking into consideration sex, weight, age, background and breeding. Further, many managers consider frame size, muscling and condition when buying and sorting feeders. The purpose of sorting uniform pens of feeder cattle is to obtain more uniform gains and finishing in the feedlot in order that the lot, individuals considered, can be targeted more precisely to the desired finished condition or carcass quality and yield grade. Often times it is difficult, under commercial conditions, to allot animals as uniformly as desired. Rates of gain and finishing are variable; some animals reach the desired finished condition faster and should be marketed earlier to avoid stall-out in gain, excessive feed costs per unit gain and overfinishing. Many feedlot operators have found it profitable to "top out" these faster finishing cattle when they have reached the desired fat cover. For Tender Trim beef, the desired fat thickness over the ribeye is a minimum of .2 in to a maximum of .6 in.

PROCEDURE

Animals used -- Crossbred feeder cattle used in this trial were quite variable in breed composition. They were purchased as calves from several sources and backgrounded on a ration containing approximately 75% sorghum silage and 24% concentrate (as-fed basis) in White Feedlot pens. The cattle were predominantly of medium frame size with moderate muscling, although about 30% had heavy muscling. After backgrounding the cattle were in medium condition and the average age was estimated to be about 16 months when the feedlot trial was started; however, age estimated ranged from 12 to 22 months in individuals.

The steers were vaccinated shortly after they were purchased and before they were backgrounded. When placed in the feedlot on trial, all cattle were implanted with Synovex-S, wormed with Tramisol drench and dipped in Co Ral®.

The steers were ear tagged for individual identification, weighed and scored for frame size, muscling, condition and temperament. The 111 cattle were fed in one open dirt pen with partial shade provided by a few trees.

Feeding -- A high grain feed mix (Table 1) was full-fed throughout the finishing period. The percentage of total grain in the feed (corn, wheat and barley) remained at 74 to 75% during the trial; however, relative percentages of corn screenings, rolled wheat and rolled barley were changed three times during the feeding period due to fluctuations in prices and availability of the various grains. Percentages of feeds shown in table 1 are averages for the entire trial.

TABLE 1. COMPOSITION OF FEED MIX - WHITE FEEDLOT, MARCH 27-AUGUST 11, 1983

Ingredient	% As-fed	% D.M. basis
Corn screenings	51.0	58.6
Rolled wheat	17.5	20.8
Rolled barley	6.0	7.1
Corn silage	20.0	8.0
40% Feedlot supplement*	5.5	5.5
	100.0	100.0

*Liquid supplement containing 40% crude protein, minerals, vitamin A and Rumensin added to supply 200 mg/head/day.

Weighing conditions of live cattle -- Actual weights with no shrink deducted were used at the start and end of the feeding trial. The cattle were in holding pens without feed and water for several hours before the initial weighing. Prior to final weighing, the finished steers were trucked 50 miles to the packing plant in Ocala and held overnight without feed. In both instances, it was assumed that enough actual shrink had occurred before the cattle crossed the scales.

Slaughter -- After 113 days on feed, the first truckload (44 head) of cattle was sent to slaughter. Steers were selected for slaughter on visual estimates of thickness of fat cover over the ribeye (FOE) in an effort to maximize the number of carcasses that met the specifications for Tender Trim. The remaining 67 steers were slaughtered four weeks later after 141 days on feed when visual estimates of FOE indicated that most of the cattle had attained their maximum potential for Tender Trim.

Carcass evaluation -- Carcasses were chilled for 48 hr before grading. USDA carcass quality and yield grade factors were determined by an official government beef grader. Carcass characteristics determined or evaluated included hot carcass weight, degree of marbling, carcass maturity, color, firmness and texture of lean USDA quality grade, fat thickness over the ribeye, ribeye area, estimated kidney, pelvic and heart fat and USDA yield grade.

The practically devoid degree of marbling was scored 2; traces, 3; slight, 4; small, 5 and modest, 6. Color of lean was evaluated on the scale of 3 designating light cherry red; 4, cherry red; 5, moderately dark red and 6, dark red. Firm lean was scored 2; moderately firm, 3; slightly soft, 4 and soft, 5. Fine textured lean was designated 2; moderately fine, 3; slightly coarse, 4 and coarse, 5. Quality grades were tabulated with 11 designating average standard; 14, average good and 17, average choice.

Statistical analysis -- Data were analyzed by standard statistical procedures (SAS). Least square means and standard errors were determined for each performance and carcass parameter. A statistical model with frame size and muscle score was utilized to determine the effects of different frame and muscle categories. A statistical model with frame size, muscle score, condition and temperament was used to evaluate effects of condition and temperament. For determining the effects of frame size, muscle score, condition and temperament, the initial weight, slaughter weight and average daily gain values were adjusted for differences in dressing percent.

RESULTS AND DISCUSSIONS

Results of the finishing trial are given in Table 2. The average daily consumption of the high energy ration was 20.7 lb of feed dry matter and a higher rate of gain and better feed conversion might have been expected. An examination of individual daily gains, which are not presented in this report, reveals that a fourth of the cattle made sub-standard gains (below 2.3 lb/day). Without these poor-performing cattle, gains would have been excellent.

TABLE 2. FEEDLOT PERFORMANCE - WHITE FEEDLOT STEERS, 1983

No. of steers	111
Initial wt., lb*	670
Final wt., lb**	1015
Total gain, lb	345
Days of feed	130
Daily gain, lb, avg.	2.65
<u>Feed consumption</u>	
As-fed basis, lb/day	27.7
Dry matter, lb/day	20.7
<u>Feed/100 lb gain</u>	
As-fed basis, lb	1045
Dry matter, lb	783
Hot carcass wt., lb	637
Dress, %	62.8

*Based on weights at White Feedlot after processing the cattle going into the lot (no shrink deducted).

**Based on weights with no shrink deducted after trucking 50 miles to the packing plant and standing overnight without feed.

The carcass quality and yield grade information for steers slaughtered after 113 and 141 days on feed are presented in table 3. Though there was a 28 day difference between the two groups in days on feed, it is apparent that the two groups were similar in degree of finish. Hot carcass weights averaged 635 and 638 lb for the 113 and 141 day groups, respectively; similarly fat over the ribeye averaged .49 and .46 in. The 113 and 141 day groups had kidney, pelvic and heart fat percentages of 2.2 and 1.9, ribeye areas of 11.2 and 11.1 and yield grade averages of 3.0 and 2.9, respectively. It appears, therefore, that "topping out" for slaughter prevented a costly overfinishing of the first group and thereby contributed to maximizing the number of correctly finished carcasses from the lot of 111 steers. Quality and yield grade distribution (Table 4) shows that nine carcasses carried excessive finish; 8 were yield grade 4 carcasses and 1 was a yield grade 5 carcass.

TABLE 3. AVERAGE CARCASS QUALITY AND YIELD GRADES -- WHITE FEEDLOT

	Days on Feed	
	113	141
No. of carcasses	44	67
Hot carcass wt., lb	635	638
Fat over ribeye, in	.49	.46
Ribeye area, sq. in	11.2	11.1
Kidney, heart, pelvic fat, %	2.2	1.9
USDA yield grade	3.0	2.9
Degree of marbling	4.44	4.47
Color of lean	2.8	3.0
Firmness of lean	3.0	3.0
Texture of lean	3.0	2.2
USDA Quality grade	13.6	13.8

TABLE 4. QUALITY AND YIELD GRADE DISTRIBUTION CARCASSES* -- WHITE FEEDLOT

Yield Grade	Quality Grade		
	Choice	Good	Standard
1	--	7	4
2	4	34	10
3	8	32	3
4	3	4	1
5	--	1	--

*Number of carcasses in each category.

Fifty-seven percent of the carcasses met all Tender Trim specifications (Table 5), including the qualifying Choice carcasses. Of the carcasses that failed to qualify, most exceeded 0.60 in fat over the ribeye or the maximum yield grade of 3.2; only 1 carcass lacked 0.20 in fat over the ribeye; 18 carcasses lacked the slight degree of marbling. As to saleability, 63 percent would be considered very marketable, i.e., the 11 percent Choice plus the 52 percent Tender Trim.

TABLE 5. COMPLIANCE WITH TENDER TRIM SPECIFICATIONS AND SALEABILITY OF CARCASSES -- WHITE FEEDLOT

No. of carcasses	111
<u>Tender Trim compliance</u>	
Met all specs., %	57
Reasons for drop-out	*
Lacked slight marbling, no.	18
Exceeded FOE of 0.60 in, no	21
Less than 0.20 in FOE, no	1
Exceeded Y.G. of 3.2, no	30
<u>Saleability</u>	
As Choice, Y.G. 3 or better, %	11
As Tender Trim, %	52
As Stnds: Gds over 3.2 Y.G.;	
FOE outside .2 and .6 in:	
Y.G. 4 and up, %	37

*48 carcasses out on 70 counts.

The large frame steers had higher initial weights, slaughter weights, carcass weights and daily gains (2.83 vs 2.62 lb) than medium frame steers but some of these differences were not statistically significant ($P < .05$) due to limited numbers. The large frame steers also tended to have ($P < .20$) larger ribeye areas (11.4 vs 11.1 sq. in) than medium frame steers. The fat thickness over the ribeye was lower (.36 vs .50 in) contributing to a lower yield grade (2.68 vs 3.01) in the carcasses from the large frame steers compared to medium frame steers.

The heavy muscled steers had similar feedlot performance and carcass characteristics compared to medium muscled steers in this experiment.

Feeder steer condition scores (CS) ranged from 11 to 14 with 52% of the steers given a 12 CS. The initial weight, slaughter weight and carcass weight increased as CS increased. Carcass fat over the ribeye, kidney, pelvic and heart fat, yield grade and quality grade increased as feeder steer CS increased which was expected.

The steers were evaluated for temperament after processing through the chute and 33, 46, 14 and 7% of the steers had temperament scores 1, 2, 3 and 4 respectively. The steers in each temperament category had similar performance and carcass characteristics except for the USDA quality grade. The percent of carcasses with Standard quality grade was 11, 16, 25 and 25 for temperament scores 1, 2, 3 and 4 respectively. Other trials have shown lower gains in feedlot cattle with higher temperament scores but in this trial the steers were scored after processing. A hot shot was used while processing the cattle in this trial which may have prevented a good evaluation of the temperament.