# Use of Ultrasound Backfat Estimates to Form Marketing Groups Prior to Finishing for Feedlot Steers

**A.S. Leaflet R1430**

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**Summary**

**An experiment was conducted using 95 Continental crossbred steers. The cattle were sorted by ultrasound 160 days before slaughter into a low backfat group (Low BF) and a higher backfat group (High BF). Half of the Low BF and half of the High BF were implanted whereas the other halves were not. Data from the experiment were used in two hypothetical markets. One market was a high yield beef program (HY) that did not allow the use of implants. The second market was a commodity beef program (CM) that allowed the use of implants. The cattle were priced as an unsorted group (ALL) and two sorted groups (Low BF and High BF) within the HY (non-implanted) and CM (implanted) markets. The CM program had a base price of $1.05/lb hot carcass weight (HCW) with a $0.15/lb HCW discount for quality grade (QG) Select and a $0.20/lb HCW discount for yield grade (YG) 4. The HY program used a base price of $1.07/lb HCW with premiums ($/lb HCW) paid for YG ≤ .9 (.15), 1.0 - 1.4 (.10), and 1.5 - 1.9 (.03). The carcasses were discounted ($/lb HCW) for YG 2.5 - 2.9 (.03), 3.0 - 3.9 (.15), and ≥ 4.0 (.35). This data set provides good evidence that the end point at which to sell a group of cattle depends on the particular market. Sorting had an economic advantage over ALL in the HY Low BF and the CM High BF groups. The HY High BF cattle should have been sold sooner due to the discounts recieved for increased YG. The increased YG was directly affected by an increase in BF. Furthermore, the CM Low BF group should have been fed longer to increase the number of carcasses grading Choice.**

## Introduction

Feeding a pen of cattle as if all were identical has been done for a long time in the beef cattle industry. With the advent of real-time ultrasound, cattle may now be sorted and grouped to be more identical compositionally. This allows a pen of cattle to be finished more efficiently by removing the over and under fed cattle, leaving a more uniform group. The only problem that remains is that the cattle may or may not be similar at the end of the finishing period. There has been recent work by many researchers trying to develop equations that predict the outcome of the finishing phase from estimates of carcass parameters prior to the finishing phase. In this experiment cattle were sorted 160 days prior to slaughter under the assumption that the cattle in the lower backfat group at the beginning would remain in the lower backfat group at the end, and so on for the higher backfat group.

## Materials and Methods

An experiment was conducted using 95 Continental crossbred yearling steers. The cattle were sorted by ultrasound into a low backfat group (Low BF) and a higher backfat group (High BF). The starting weight and initial backfat was 818.8 lb ± 67.5 and 0.09 in ± .02 for the Low BF and 857.3 lb ± 68.4 and 0.14 in ± .03 for the High BF, respectively. The implanted cattle were implanted with Revalor® at the beginning of the trial when the cattle were sorted into high and low backfat groups. All the cattle were slaughtered at day 160 of the trial.

**Table 1. Carcass data.**

| Variable | Implanted | | | Non-implanted | | |
|---|---|---|---|---|---|---|
| | ALL | High BF | Low BF | ALL | High BF | Low BF |
| n | 48 | 24 | 24 | 47 | 23 | 24 |
| Initial wt, lb | 839 | 854 | 823 | 837 | 861 | 814 |
| Initial BF, in | .12 | .14 | .10 | .12 | .15 | .09 |
| Final wt, lb | 1362 | 1366 | 1359 | 1273 | 1282 | 1265 |
| Final BF, in | .41 | .46 | .36 | .38 | .44 | .31 |
| HCW, lb | 845.2 | 845.1 | 845.3 | 785.2 | 793.1 | 777.7 |
| Choice, % | 75 | 83 | 67 | 85 | 91 | 79 |
| YG | 2.2 | 2.4 | 2.0 | 2.2 | 2.4 | 2.0 |
| YG ≥ 4, % | 4 | 8 | 0 | 0 | 0 | 0 |

Data from the experiment were used in two hypothetical markets. One market was a high yield beef program (HY) that did not allow the use of implants. The second market was a commodity beef program (CM) that allowed the use of implants. The cattle were priced as an unsorted group (ALL) and two sorted groups (Low BF and High BF) within the HY (non-implanted) and CM (implanted) markets. The pricing schedule used is presented in Table 2.

**Table 2. Carcass pricing schedule[1].**

| Price variable | Market | |
|---|---|---|
| | CM | HY |
| Base price | 1.05 | 1.07 |
| QG Select | (.15) | |
| YG < 1.0 | | .15 |
| YG 1.0 - 1.4 | | .10 |
| YG 1.5 - 1.9 | | .03 |
| YG 2.0 - 2.4 | | |
| YG 2.5 - 2.9 | | (.03) |
| YG 3.0 - 3.9 | | (.15) |
| YG $\geq$ 4.0 | (.20) | (.35) |

[1]All values are $/lb hot carcass weight with parentheses indicating negative values.

## Results and Discussion

This data set provides good evidence that the end point at which to sell a group of cattle depends on the particular market. Cattle that were sorted and sold into the same market received a higher and a lower price than the unsorted cattle which brought an average of the two. Data from this experiment showed that implanted and non-implanted cattle with lower initial backfat had less carcass backfat compared to cattle with higher initial backfat. As equations evolve for predicting finished composition from initial composition, decisions will be made prior to finishing that should allow a producer to receive the high price for each market group. This will allow producers to manage each group according to the premiums paid in a market.

Results from the markets are presented in Table 3. For the HY program, the Low BF group had an economic advantage over the ALL and High BF groups. This suggests that the High BF group be managed to acheive premiums in a different market or sold sooner due to the discounts recieved for increased YG. The increased YG was directly affected by an increase in backfat.

The High BF cattle had the advantage in the CM market over the ALL and Low BF groups suggesting the Low BF group be fed a higher energy ration, be fed longer, or a different implant or implant combination used. Feeding the Low BF group longer would tend to increase the number of carcasses grading Choice, hence decreasing the discounts for QG Select.

## Implications

**With the increasing interest in "branded" products comes a strong need for ultrasound in the smaller feedyards typical of Iowa. Ultrasound would aid producers in the production of a product that fills the demand for such "branded" items. The carcass specifications required for these products are stringent and heavy penalties are assessed on cattle that do not qualify. Therefore, producers can tailor their management programs to produce the precise product that is demanded and that their breed types will allow, only after knowing what they are starting with and where they are starting from. Ultrasound is a practical means of knowing your product before you specify a feeding regimen.**

**Table 3. Carcass value.**

| Cattle group | n | Market | Implant | Carcass value, $ | Feed cost, $ | Net income, $ |
|---|---|---|---|---|---|---|
| ALL | 47 | HY | - | 773.63 | 305.46 | 468.17 |
| Low BF | 24 | HY | - | 788.30 | 315.35 | 472.95 |
| High BF | 23 | HY | - | 758.32 | 295.14 | 463.18 |
| ALL | 48 | CM | + | 822.29 | 324.70 | 557.59 |
| Low BF | 24 | CM | + | 877.24 | 332.06 | 545.18 |
| High BF | 24 | CM | + | 887.34 | 317.34 | 570.00 |

[1]Feed cost was $0.10/lb DM
[2]Net income ($/hd) = carcass value - feed costs