Holstein Market Cow Feeding Project

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According to the 1994 National Non-Fed Beef Audit, nearly $70/head is lost in value from cull cows. Perhaps as much as $20 could be recovered by feeding cull cows a high energy diet. The majority of the cull cows marketed in the northeast come from dairy farms. These cows are culled at an earlier age than beef cows. The carcasses from these younger cows that contain adequate quality and quantity of muscle and fat are in short supply. Several studies have shown that feeding cull beef cows that are in thin body condition can increase carcass quality. Fewer studies have been conducted with cull dairy cows, and none have examined the impact of decreased locomotion on carcass value. The purpose of this study is to examine the effect of management and nutrition on carcass composition and quality of cull dairy cows.

Cull dairy cows were purchased from local auction barns by Taylor/Cargill. The buyers were instructed to purchase non-diseased, young cows. At the time of purchase the cows were checked by a veterinarian and all pregnant cows were removed from the study. The cows (n = 65) were then delivered to the Beef Unit of Cornell's Teaching and Research Center in Dryden, NY. The cows were placed on an all hay diet for 8-10 days to reduce effects on any lactating cows. The final diet is shown in Table 1.

Table 1. Ration fed to Holstein Market Cows

Ingredient	%, DM basis
Corn silage	40.0
Refusals[1]	2.5
Dry shelled corn	3.4
Cracked corn	22.1
High moisture shelled corn	7.0
Grass hay	15.4
Soybean meal	7.4
Minerals	2.0
Lime	0.2
Cost, $/ton, as fed	94

[1]Orts from lactating cow ration

Cattle were sorted by age (determined by dentition), body condition score (BCS) and condition of feet and legs and randomly assigned to a diet with or without Optaflexx® (two pens of 33 and 32 head). Within pen, 50% of the cows were implanted with Revalor H® (Table 2). The other 50% were not implanted. The cows were fed to a BCS of 3.5 (dairy scale). Of the original 65 cows delivered to Cornell, 24 were sent to harvest before their target BCS. This was due mainly to poor performance.

Table 2. Treatment description

Treatment	Optaflexx	Implant
Imp	N	Y
Opt	Y	N
Imp + Opt	Y	Y
None	N	N

Following a 24-48 hour chill, carcass data were collected and included hot carcass weight, fat depth between the 12th and 13th rib, ribeye area, kidney pelvic heart fat, marbling score, skeletal maturity, fat color and lean color.

With the exception of ribeye area (REA), there were no differences in any of the performance factors as affected by treatment (Table 3). ADG tended (p=.09) to be higher in the implanted cattle fed Optaflexx. The cattle on the Opt + Imp treatment had a larger REA than the cattle with no implant or Optaflexx.

Table 3. Performance of Market Holstein Cows fed Optaflexx and implanted with Revalor H.

	Treatment			
Item	IMP	OPT	OPT + IMP	none
N	10	10	12	9
Initial wt, lb.	1161	1230	1216	1211
Harvest wt, lb.	1390	1450	1455	1395
Days fed	71	70	70	71
ADG, lb.	3.2	3.1	3.4	2.6
Final BCS (Beef)	3.3 (5.7)	3.3 (5.6)	3.4 (5.7)	3.2 (5.4)
Hot carcass wt, lb.	716	734	757	708
Fat color	2.3	2.2	2.3	2.1
Dressing percent	51.4	50.6	52.0	50.7
Back fat, in.	0.18	0.16	0.13	0.17
Ribeye area, in^2	10.5	10.0	10.9^a	9.4^b
Marbling[a]	507	494	475	524
Boning Utility, %	10.5	36.8	36.8	15.8
Canner, %	33.3	-	33.3	33.3
Cutter, %	40.0	20.0	20.0	20.0
White cow, %	35.7	14.3	21.4	28.6

[a]Marbling 400 = slight; 500 = small

[a,b]Values in rows with different superscripts differ at p<.05

Feeding increased carcass quality of Holstein cows (Table 4). The carcasses from the fed cows were heavier, contained more external and intramuscular fat, the fat color was whiter, and a higher percentage were of the desired quality grade of Boning utility and White cow. In addition all the primal cuts measured were heavier and represented a higher proportion of the HCW in fed vs. non-fed cows.

Table 4. Carcass and primal cuts of Holstein cows harvested immediately (non-fed) after purchase and after feeding

	Non-fed	Fed
N	19	41
Harvest weight, lb.	1170	1425
Hot carcass weight, lb	528	730
Fat color score	3.4	2.2
Dressing percent	45.1	51.2
Backfat, in.	0.05	0.15
Ribeye area, in^2	7.4	10.2
Marbling[a]	345	498
Canner, %	63.2	7.3
Cutter, %	26.3	12.2
Boning Utility, %	10.5	46.3
White cow, %	0	34.1

[a]Marbling 200=practically devoid; 300=traces; 400=slight; 500=small

In this pilot study the economics of feeding cull cows were not positive (Table 5). This was due primarily to when the money was available to fund the study. The price of cull cows show a very consistent seasonal trend. These cows were purchased in August (high price) and sold in November (low price). So at certain times of the year it may not make economic sense to feed thin cows. Profit aside, several positive factors were shown (Table 6). Cows gained an average of 3.5 pounds per day, all carcass quality attributes improved, muscle size and weight increased. Additionally, cows that tested positive for antibiotic residues were clean after feeding, thereby eliminating the potential for carcass condemnation due to residues.

Table 5. Cost and return of Holstein Market cows

Item	Cost
Feed, $/hd	153
Yardage @ $.30/hd/day	18
Total cost, $/hd	171
Value, non-fed cow, $/hd	473
Value, fed cow, $/hd	654
Value change, $/hd	181
Net return, $/hd	10

Table 6. Market weight and value of non-fed and fed Holstein market cows

	Non-fed	Fed
Market weight	1170	1425
Hot carcass weight, lb	528	730
Dressing percent	45.1	51.2
$/lb, HCW	89.50	89.51
Carcass value, $/hd	472.75	654.21

Further areas of study:

- Feeding refusal feeds or by-product feeds might drastically reduce feed costs.
- Feeding some cows for a longer period would increase the number of cows reaching the "White Cow" grade and increase their value.
- Establishing a way to eliminate cows with disease such as Johne's would reduce feeding costs significantly.

The drawbacks for some producers would be the additional facilities, labor and management required to feed cows for market. The number of cows having poor performance due to latent disease or lameness might be a major deterrent to profitability.

It is apparent more information is needed before we make wide recommendations to dairy farmers about feeding culled cows. Packers are becoming more serious about establishing charge-backs on serious carcass defects so producers need to examine all procedures, which might reduce costs and increase the value and safety of the products they supply to consumers.