



CARCASS DATA ON WAGYU BULLS FED FOR THE U.S. MARKET¹

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INTRODUCTION

Feeding British breeds or continental European breeds as intact males or bullocks (young bulls, A-maturity) has never caught on in the United States. The main criticism, apart from difficulty in managing them in the feedlot and transporting them to slaughter, has centered on low quality grades (lack of marbling) and perceived tenderness problems.

Recognizing the superior marbling ability of the Wagyu breed, a study was initiated in 1995 to determine the feedlot performance and carcass traits of young high percentage Wagyu bulls. A second study was conducted in 1996.

As a part of the feeding regime, two levels of by-pass protein (rumen escape protein) were studied, 55 grams per head and 110 grams per head per day, which were compared to the control diet (barley based and supplemented to meet all requirement). Evidence in the literature suggests that marbling scores may be increased with escape protein in the diets of beef cattle. All of the bulls received Vitamin E supplementation the last 100 days in the feedlot at the rate of 500 International Units (IU) per head per day.

Tables 1 and 2 show the feedlot performance data for the 1995 and 1996 trials, respectively. Note that the 1995 bulls were put on feed as calves (7-8 months old), compared to 1996, where the bulls were placed on feed as yearlings (12 to 13 months of age). This fact may have influenced the slightly higher average daily gains for the 1995 bulls, compared to the 1996 bulls.

¹ Acknowledgement – Bulls and feed costs supplied by a grant from Gerry Pittinger, Blue Rock Cattle Company, Ellensburg WA.

Also, in 1995, six of the bulls were half-blood Wagyu. In 1996, all of the bulls were three-quarter or more Wagyu.

Table 1. 1995 Feedlot performance (averages) of Wagyu bulls.

Treatment, Escape Protein	Number Per Trt.	Weight on Test (Lbs.)	Final Weight (Lbs.)	Total Gain (Lbs.)	Days* on Test	Average Daily Gain (Lbs.)
Control	4	452	1,193	742	196	3.83
55 grams	6	428	1,219	775	195	4.05
110 grams	4	418	1,196	778	196	4.02

* Bull calves were born in August and September 1994. They were put on feed May 8, 1995. They were slaughtered in October, November and December 1995.

Table 2. 1996 Feedlot performance (averages) of Wagyu bulls.

Treatment, Escape Protein	Number Per Trt.	Weight on Test (Lbs.)	Final Weight (Lbs.)	Total Gain (Lbs.)	Days* on Test	Average Daily Gain (Lbs.)
Control	4	654	1,272	618	170	3.67
55 grams	4	669	1,211	542	170	3.24
110 grams	4	666	1,215	550	170	3.24

* Bull calves were born in February and March 1995. They were put on feed March 4, 1996. They were slaughtered in August 1996.

Tables 3 and 4 present the yield grade data for 1995 and 1996, respectively. Target hot carcasses weight of 700 to 800 pounds were met both years. It would be difficult to imagine any more desirable outcome from the standpoint of carcass composition. All of the carcasses were desirable yield grade 1's and high cutability 2's. Ribeye areas were larger than average for the corresponding hot carcass weights, but none were extreme.

Table 3. 1995 Wagyu bullock quantitative carcass traits – treatment averages.

Treatment, Escape Protein	Number Per Trt.	Hot Carcass Wt. (lbs.)	Dress %	Fat Thickness (inches)	Ribeye Area (Sq. inches)	KPH Fat %	Yield Grade
Control	4	752	63.1	.36	13.5	3.0	2.5
55 grams	6	758	62.2	.41	14.7	2.9	2.3
110 grams	4	744	62.0	.31	14.5	2.4	1.9

Table 4. 1996 Wagyu bullock quantitative carcass traits – treatment averages.

Treatment, Escape Protein	Number Per Trt.	Hot Carcass Wt. (lbs.)	Dress %	Fat Thickness (inches)	Ribeye Area (Sq. inches)	KPH Fat %	Yield Grade
Control	4	827	65.1	.44	15.4	2.9	2.4
55 grams	4	780	64.4	.27	15.5	2.9	1.9
110 grams	4	790	65.0	.32	14.6	2.9	2.2

The big payoff in this study has to do with quality grade data. Tables 5 and 6 present the average marbling scores and USDA quality grades. Out of 26 bullock carcasses, 25 graded choice or better. This is an unbelievable result. Going in, conventional wisdom would have predicted no

more than 25 to 40% choice. And, it appears that there will be some sire differences in marbling production. We are continuing to study this with slaughter groups of heifers and bulls in 1997. When three years of data are combined, we will have further evidence of sire effects.

At this date, the jury is still out on the benefits of rumen escape protein. With the small number of bulls included in the 1995 and 1996 studies, it is difficult to draw hard and fast conclusions without further statistical analysis. However, there is a trend towards increasing average marbling score with the 55 gram treatment (see Tables 5 and 6). We suspect that we ran into a palatability problem with the higher 110 gram treatment. Bulls tended to sort the ration and leave escape protein in the bunks.

Table 5. 1995 Wagyu bullock qualitative carcass traits – treatment averages.

Treatment, Escape Protein	Number Per Trt.	Marbling Score	USDA Quality Grades*
Control	4	Small ⁴²	1-Low select – 3-Low choice
55 grams	6	Small ⁹⁸	4-Low choice, 1-Average choice, 1-High choice
110 grams	4	Modest ¹²	2-Low choice, 1-Average choice, 1-High choice

* 1995 Summary: 1-Low select; 9-Low choice; 2-Average choice; 2-High choice

Table 6. 1996 Wagyu bullock qualitative carcass traits – treatment averages.

Treatment, Escape Protein	Number Per Trt.	Marbling Score	USDA Quality Grades*
Control	4	Moderate ¹²	1-Average choice, 2-High choice, 1-Low prime
55 grams	4	Slightly Abundant ⁰⁷	2-High Choice, 1-Low prime, 1-Average prime
110 grams	4	Modest ⁶²	1-Low choice, 1-Average choice, 2-High choice

*1996 Summary: 1-Low choice; 2-Average choice; 6-High choice; 2-Low prime; 1-Average prime

Table 7 presents the Warner-Bratzler Shear data. The Warner-Bratzler Shear machine is a time-honored method of objectively measuring tenderness of cooked steaks. Without question, all of the bulls produced tender, consumer-acceptable meat. Steaks with Shear values (average pounds of force required to shear one-half inch diameter cores) below 9 pounds are generally considered desirable. Subsequent sales of the bullock carcasses sides for locker beef proved to be enormously successful at the Washington State University Meat Science Laboratory. Families that bought sides in 1995 returned for another in 1996, and some families opted for a whole carcass in 1996. The most frequent comment was “that was the best beef I ever tasted.”

Table 7. Warner-Bratzler Shear (Tenderness) data by year and treatment (averages).

Treatment, Escape Protein	1995 Shear Force (lbs.)*	1996 Shear Force (lbs.)*
Control	6.69	7.83
55 grams	6.17	6.72
110 grams	5.91	7.16

* Fifteen to 18 one-half inch cores were sheared for each carcass from a cooked 12th rib steak.

SUMMARY

Where do we go from here? Obviously, we have shown that young, high-percentage Wagyu bulls produce outstanding carcass beef. It remains to be determined how official USDA graders would react to these carcasses. If they identify them as young bulls, they will grade them using the standards for steer and heifer beef, plus stamp the word "BULLOCK" on the carcass. With such a strong bias against bull beef in the United States, it is doubtful that Wagyu-cross bullock carcasses would be accepted as generic beef. Perhaps the greatest success could come through a branded beef program.

A spin-off of this study suggests that valuable progeny data can be obtained. If sire-group intact males marbled, it follows that steer and heifer progeny surely would. This concept deserves more study and consideration. Perhaps young bulls can be fed for slaughter, collected, slaughtered and then used for breeding (Artificial Insemination) if they produce outstanding carcasses.