



THE GROWTH PERFORMANCE OF WAGYU-CROSS (F_1) CATTLE DURING A BACKGROUND, GRAZING, AND FINISHING PHASE.

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SUMMARY

One hundred eighteen Wagyu-cross cattle, 64 steers and 54 heifers, were used to evaluate growth performance during background, grazing, and finishing phases. Seven- to nine- month old cattle were fed a backgrounding phase diet (80:20 roughage:concentrate) for 112 d. The initial average weight of the cattle was 664 lbs. At this time the Wagyu-cross steers averaged 1.3 lb gain/d, while the heifers averaged 1.4 lb gain/d, and the feed conversion ratio was 13.8 lbs of feed (DM) per pound of gain. At the completion of the backgrounding phase the cattle were turned out onto a grass pasture for 84 d. The average daily gain of the cattle on grass pasture was 1.2 lbs/d. Following the grazing period the cattle were moved to the feedlot and adapted to a diet consisting of 10:90 roughage:concentrate for 231 d. The average daily gain of the steers and the heifers during the finishing phase was 2.9 lbs/d and 2.7 lbs/d, respectively. Feed efficiency was 10.1 lbs of feed (DM) per pound of gain during this feeding phase. The average weight of the Wagyu-cross steers and heifers at the time of slaughter was 1556 and 1432 lbs, respectively. Three heifers died of acidosis or bloat before the completion of the project. Sixty-one of the carcasses graded prime, while the remaining 54 graded choice.

INTRODUCTION

The American beef industry has been losing out on the global meat market (compared to the poultry and pork industry) because it has not been able to supply the type of beef the international market demands. Also, ailing cattle prices and increased feed costs have forced the industry to look at making dynamic changes in marketing, specifically in the area of export. American beef originally exported to Japan did not appeal to their consumers because it lacked the taste and the quality demanded by the Japanese people. To aid in building bridges for American beef exports to Japan, Washington State University (WSU) is researching ways to

produce high quality beef for Japanese export under management conditions typically used in the Northwest. To obtain this goal the University developed a herd of Japanese Wagyu-cross cattle, which allows research to be conducted on various production components involved in raising these cattle known for their high marbling ability. The objective of this research project at WSU was to evaluate the growth and carcass characteristics of Wagyu-cross steers and heifers sired by 8 different Wagyu bulls. These F₁ Wagyu-cross calves were from Angus or Angus-cross dams from the WSU Beef Center and a commercial crossbred cow herd from Eastern Washington.

MATERIALS AND METHODS

Animals

To achieve the stated objective, the weight and feed consumption of 64 F₁ Wagyu-cross steers and 54 F₁ Wagyu-cross heifers was monitored monthly for 16 months during three different feeding phases prior to slaughter. The initial weight of the Wagyu-cross steers and heifers was 706 and 622 lbs, respectively. To minimize pen effects, the cattle were randomly allotted to a pen by sex, sire, and weight. Therefore, the heifers and steers were separated, and each pen (7-8 hd/pen) had a balanced representation of the sires and were of similar weight. Once a month, the cattle were weighed prior to feeding to limit fill effects. Animals were fed once a day at 0800 h, and feed bunks were monitored 2-3 times per day to ensure proper feeding practices.

Feeding Phases

The cattle were backgrounded at 7 to 9 months of age (initiation of the research project) for 112 d on a 80:20 ratio diet of roughage:concentrate (Table 1). After the completion of the backgrounding phase the cattle were turned out onto a pasture of mixed grasses for 84 d. Following pasture grazing the cattle were brought back to the feedlot and fed out for 231 d (finishing phase) on a 10:90 ratio diet of roughage:concentrate prior to slaughter (Table 2). Once the cattle were moved into the feedlot they were fed a diet consisting of 75% roughage and 15% concentrate. The concentrate portion of the diet was increased in five increments of 15%, while the roughage portion was decreased in the same manner over a 35 d period to result in a final diet of 10:90. The finishing diet was fed to the cattle ad libitum. The roughage portion of the diet during the backgrounding and finishing phase consisted of various amounts of alfalfa hay cubes and oatlage, while the concentrate portion was primarily steam rolled barley. During the

backgrounding and finishing phase the heifers received melengestrol acetate (MGA) as a feed additive to suppress estrus. Three Wagyu-cross heifers died of acidosis or bloat before the completion of the project. At the completion of the finishing phase the cattle were slaughtered (approximately 22-24 months of age).

Table 1. Diet composition during the 112 d backgrounding phase of the Wagyu-cross cattle feeding trial.

Item	% of DM
Alfalfa hay/Oatlage	70
Steam Rolled Barley	30
TM Salt w/ Selenium	Ad lib
Melengestrol acetate (MGA) ^a	.5
Dry Matter	69.4
Crude Protein	14.3
Neutral Detergent Fiber	45.1
Acid Detergent Fiber	31.3

^aMGA was fed only to the heifers.

Table 2. Finishing diet composition for Wagyu-cross cattle feeding trial (231 d).

Item	% of DM
Alfalfa hay cubes/Oatlage	10
Steam Rolled Barley	90
TM Salt	ad lib
Melengestrol Acetate (MGA) ^a	.7
Dry Matter	84.5
Crude Protein	11.6
Neutral Detergent Fiber	25.0
Acid Detergent Fiber	13.2

^aMGA was fed only to the heifers.

RESULTS AND DISCUSSION

During the 112 d backgrounding phase the cattle gained approximately 1.4 lbs/d. The average daily gain (ADG) of the steers was 1.3 lbs/d while the heifers gained 1.4 lbs/d (Table 3). The feed conversion ratio for the Wagyu-cross cattle during this phase was 13.75 lbs of feed (DM) per pound of gain. At the completion of the backgrounding phase the cattle were turned out on pasture for 84 d. The average weight of the steers was 852 lbs and the heifers weighed 777 lbs at the beginning of this phase (Table 4). The overall ADG of the cattle during the grazing period was 1.2 lbs/d. The Wagyu-cross steers gained an average of 1.3 lb/d and the heifers gained an

average a 1.1 lb gain/d. When the cattle were removed from the pasture and placed in the feedlot the steers weighed 964 lbs and the heifers weighed 870 lbs.

Table 3. Wagyu-cross cattle growth performance during the 112 d backgrounding phase.

Item	Heifers	Steers
Initial wt. lbs.	622	706
Average daily gain, lbs/d	1.38	1.31
F/G, lbs of feed (DM)/lb of gain	13.75	13.75

Table 4. The growth performance of Wagyu-cross cattle on a grass pasture.

Item	Heifers	Steers
Initial wt. lbs.	777	852
Average daily gain, lbs/d	1.11	1.34

^aThe cattle were on a grass mixed pasture diet for 84 d.

The Wagyu-cross cattle gained 2.8 lbs/day over the 231 d period. Steers gained an average of 2.9 lbs/d while the heifers gained 2.7 lbs/d (Table 5). This resulted in a feed efficiency of approximately 10 lbs of feed (DM) per pound of gain. The average weight at the time of slaughter was 1556 lbs for the steers and 1432 lbs for the heifers. After evaluation of the carcasses it was determined that 61 of the Wagyu-cross cattle graded prime, while the remaining 54 graded choice.

Table 5. The growth and carcass performance of Wagyu-cross cattle during the finishing phase.

Item	Heifers	Steers
Initial wt. lbs.	862	960
Average daily gain, lbs/d	2.66	2.79
F/G, lbs of feed (DM)/lb of gain	10.1	10.1
Average Slaughter Wt., lbs	1432	1556
Prime, %	52.0	54.0
Choice, %	48.1	46.0

Nine crossbred steers purchased from the local livestock market during the grazing period where penned with the Wagyu-cross steers in the feedlot portion of the trial. During the finishing phase these steers gained an average of 2.54 lbs/d, which is .25 lbs/d less than their Wagyu-cross pen mates. Only 44% of the livestock market purchased steers graded prime. However, one must remember that it is not appropriate to make conclusions about the comparison of these two groups because of the limited number of livestock market purchased steers fed out in this study.

IMPLICATIONS

These results suggest that the optimum quality grade of prime desired by the Japanese market can be achieved while feeding Wagyu-cross cattle in a typical Pacific Northwest feedlot setting. It should also be acknowledged that the feed efficiency of the Wagyu-cross cattle on the feeding schemes studied is not as desirable as the feed efficiency typical of the average steer or heifer in a U. S. feedlot (5-7 lbs of feed (DM) per pound of gain). Some sacrifices in production may have to be made if American cattle are going to compete for the Japanese market. However, if the quality of the beef is high enough the carcass value should offset the greater cost of feed. The American cattle industry can produce the type of beef that is demanded by specific export markets.