

AN EVALUATION OF THE RELATIONSHIP BETWEEN INCREASED CARCASS WEIGHT AND PROFITABILITY IN HONDURAN FEEDLOT CATTLE

Tosha L. Opheim^{1*}, Carlos E. Carpio², Jhones O. Sartui¹, Markus F. Miller¹, Maria E. Bueso¹, and Mindy M. Brashears¹

¹Department of Animal and Food Science, Texas Tech University, Texas, US, 79409

²Department of Agricultural and Applied Economics, Texas Tech University, Texas, US, 79409

*Corresponding author email: tosha.opheim@ttu.edu

Abstract – The relationships among increased carcass weight, dressing percentage, and profitability of cattle fed in Honduras, as a result of improved management, nutritionally complete diets, and greater final live body weight, were evaluated. Local feedstuffs were included in diets to reduce costs and utilize byproducts from local production systems for sustainability. *Bos indicus*, *Bos Taurus*, and dairy-type cross cattle (n = 218; initial BW = 361 ± 59 kg) were fed finishing diets in the southwest region of Honduras. A multiple regression analysis was conducted to develop the relationship of initial body weight, dressing percentage, and final body weight to profitability. These data indicate that as final body weight and dressing percentage increase, profitability increases.

Key Words – feedlot cattle, Honduras, profitability

I. INTRODUCTION

Increased beef production can be accomplished through genetics, technology, and management strategies [1]. As concentrate inclusion increases in the diet, live weight gain and carcass weight gain increase during the feedlot finishing phase [1;2]. It is important to optimize the relationship between increased dietary costs and profit received from increased beef yield on the carcass. Through the continued assessment of local byproducts in finishing diets, the implementation of high-concentrate diets, and the development of replicable management strategies in Honduras, quantifiable increases in beef production have been observed. By increasing the production of beef in developing countries the availability of high quality protein increases. However, increased production must remain profitable in order to create a self-sustaining system.

II. MATERIALS AND METHODS

Two finishing diets were formulated using local Honduran feedstuffs, such as palm kernel meal, poultry litter, and sugar cane, for bulls in confinement. In 2016, *Bos indicus*, *Bos Taurus*, and dairy-type crossed cattle (n = 218; initial BW = 361 ± 59 kg) were fed in 6 separate lots in the southwest region of Honduras. Upon arrival to the feedlot, cattle were processed, which included vaccination, individual identification, implantation, and treatment of parasites. Bulls were fed between 68-146 d with an average of 110 d; final BW ranged from 369-617 kg with an average of 478 kg. Cattle were harvested at a local abattoir where hot carcass weight (HCW) was recorded. Dressing percentage (DP) was calculated as HCW divided by the final live body weight at the plant; DP ranged from 47.98- 60.08% with an average of 55.31%. Diet costs, purchase price, and selling price (carcass basis) were obtained from the producer. Purchase price and selling price were averaged across lots and the average was utilized as a standard to decrease market variability. All costs were on a Lempira basis then converted to U.S. dollars (2016 average exchange rate 22.37817 L./\$; [3]). Profitability was calculated as selling price less the purchase price and feed costs. All other costs were not included and assumed to be fixed (about 10% of total costs, as estimated by Gomez and Carpio [4]). Moreover, fixed costs such as yardage and labor of the facilities where the cattle were fed are not representative to the average Honduran production system. Regression equations were developed using the SURVEYREG procedure of SAS (SAS version 9.4; SAS Inst. Inc., Cary, NC). Lot was used as a cluster effect.

III. RESULTS AND DISCUSSION

As DP and final BW increase or initial BW decreases, profitability increases ($r^2 = 0.99$; Table 1). Both variables, DP and final BW, contribute to increased carcass weight. With all other variables constant, a 1 kg decrease in initial BW

results in a profit increase of \$2.12 U.S. dollars. Similarly, with all other variables constant a 1% increase in DP or a 1 kg increase in final BW result in increased profits of \$19.76 or \$2.26 U.S. dollars, respectively. As days on feed increase, feedlot costs do as well. However, as demonstrated by this analysis, profitability increases even with increased costs associated with longer feeding periods. Bondurant et al. [5] fed cattle 22 and 44 d longer than the U.S. industry average; cattle fed increased days on feed reported profitability tended to increase linearly. The increase in profit was attributed to the linear increase in HCW as well as the potential for increased quality grade premiums. Honduras, at this time, does not have a grading scale; however, the current regression equation indicates that the increase in final BW and DP, or decrease in initial BW, can still increase profitability without quality grade premiums.

Table 1. Coefficients of intercept, initial BW, final BW, and dressing % based on regression analysis.

Variable	Coefficient	SE ¹	P -value
Intercept	-1410.03	34.688	< 0.01
Initial BW	-2.12	0.029	< 0.01
Final BW	2.26	0.015	< 0.01
Dressing %	19.76	0.584	< 0.01

*The regression also included dummy variables for lot.

¹Cluster adjusted standard errors.

IV. CONCLUSION

Honduran beef producers have the potential to increase profitability by increasing final BW and DP, which increases HCW. As high quality protein production increases in the country, so does the potential for increased profitability. These increases subsequently allow the beef industry to become self-sustaining as producers, increasing their production capacities and income. High-concentrate finishing diets are not common practice in Honduras; therefore, to promote implementation, the demonstration that these diets increase meat yields and profitability is crucial.

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