



Beef Carcass Quality as Influenced by Cattle Diet In Honduran Production Systems

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Objectives

As a result of the rapidly growing global population, there is an increasing demand for greater food production, and food security represents a challenge for society. There is a need to promote livestock production, especially in developing countries like Honduras to improve human nutritional conditions. Central and South American beef production is mainly based on grazing systems. Previous studies have demonstrated that cattle diets can affect red meat yield and meat quality. Therefore, the purpose of this study was to evaluate beef quality traits in Honduran beef cattle in response to various finishing regimes.

Materials and Methods

Five different diets were developed for Honduran beef producers by Texas Tech University to improve efficiency of the beef animal and beef quality. Treatments included grass defined as the control (GF; $n = 25$), dried distillers grain (DDG; $n = 38$), palm kernel meal (PKM; $n = 38$), sugarcane (SC; $n = 34$), soybean meal with corn (SBMCORN; $n = 62$), and sorghum (SORG; $n = 33$). Diets were fed to *Bos indicus* crossbred cattle, and carcass data ($n = 230$) were collected. Cattle were harvested in Siguatepeque, Honduras in a commercial facility. After 24 h of chilling, carcass data were collected including pH, instrumental color, CIELAB values, maturity, marbling, lean color, dark cutter, rib fat, rib eye area, and, fat color. Data were evaluated in SAS by the GLIMMIX procedure

(SAS Inst. Inc., Cary, NC) using a significance level of $P < 0.05$. Diet served as the fixed effect, while kill group was included in the model as a random effect.

Results

Neither rib fat nor ribeye area were affected ($P > 0.05$) by treatment, despite differences in carcass weight. Treatment affected ($P < 0.05$) skeletal, overall, and lean maturity; however, the darker ($P < 0.05$) lean color of GF was driven primarily by the higher ($P < 0.05$) incidence of dark cutting than any other treatment. SBMCORN were most advanced in skeletal maturity, followed by PKM. GF had lower ($P < 0.05$) marbling than any other treatment, followed by SORG. Treatment influenced ($P < 0.05$) lean texture and firmness, along with fat color, as GF carcasses had the most yellow fat, while SC had the least yellow fat.

Objectively, diet treatment impacted pH and instrumental color ($P < 0.01$). GF carcasses had the highest pH, which translated to the lowest L^* , a^* , and b^* values, indicating the ribeyes were darker, less red, and less yellow than ribeyes from any other treatment.

Conclusion

Data from this study indicate that including feedstuffs other than grass in traditional Honduran cattle feeding diets can have a positive effect on carcass quality, as measured by subjective and objective indicators of lean color and marbling, but had little effect on carcass yield traits.