



Effects of Energy Source and Level, and Sex on Carcass and Meat Characteristics in Lambs

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Objectives

The objective of the study was to investigate concerns of excessively fat lambs in the U.S. by comparing energy source and level, and the sex of lamb, on lamb carcass and meat characteristics.

Materials and Methods

Ewe ($n = 48$) and wether ($n = 48$) lambs were blocked by sex and stratified by initial weight to pen. The three diets were ad libitum whole shelled corn (WSC; AC), 85% of ad libitum intake WSC diet (LC), or an ad libitum alfalfa pellet diet (AA). There were 4 lambs per pen, and 8 replicate pens per dietary treatment. Ewe ($n = 24$) and wether ($n = 24$) lambs were harvested on a pen basis during the periods of 7/7/2015 through 8/25/2015 when pens reached an average weight of 59.0 and 63.5 kg, respectively. Carcasses were split between the 12th and 13th rib 24 h postmortem to record carcass measurements. Minolta measurements were taken 24 h postmortem and loin chops were allowed to bloom for 20 min before color measurements were taken. Statistical analysis was conducted using PROC MIXED statement in SAS with diet and sex as fixed effects, diet and sex nested within pen as the random effect, and initial weight and final weight were used as covariates if $P < 0.20$.

Results

Off test body weight (BW) ($P < 0.01$) and slaughter BW ($P < 0.05$) were greater for wether lambs compared to ewe lambs. Hot carcass weight (HCW) was greater ($P < 0.01$) from lambs fed the WSC diets compared to lambs

fed ad libitum alfalfa pellets, while wether lambs produced greater ($P < 0.01$) HCW compared to ewe lambs. Dressing percentage was greater ($P < 0.05$) from lambs fed either the AC or LC diet compared to feeding ad libitum alfalfa pellets. Lambs fed the AC or LC diet produced carcasses with greater ($P < 0.01$) kidney fat weight, backfat thickness, bodywall thickness, marbling score, and yield grade compared to carcasses from lambs fed the AA diet. Diet tended ($P = 0.10$) to affect loin muscle area (LMA), with carcasses from LC fed lambs having the numerically largest LMA (18.54cm²) and carcasses from AA fed lambs having the smallest LMA (16.04cm²). Leg conformation scores tended ($P = 0.09$) to be greater for wether lamb carcasses compared to ewe carcasses. Diet tended ($P = 0.07$) to affect the percent boneless closely trimmed retail cuts (%BCTRC) from lamb carcasses, with AA fed lambs producing carcasses with the greatest %BCTRC, followed by the carcasses from LC fed lambs, and lastly carcasses from AC fed lambs. No significant differences ($P > 0.05$) were found between carcasses for conformation score, lean color and quality score, and quality grade. Minolta L*, a*, and b* values taken from the subcutaneous fat across the top of the shoulders on the carcass were not significantly different ($P > 0.05$). Similarly, the Minolta L* and a* values of the lean from a butterflied loin chop were not significantly different ($P > 0.05$). However, loin chop from wether carcasses had greater ($P < 0.05$) b* values compared to loin chops from ewe carcasses.

Conclusion

In conclusion, lambs fed WSC had greater dressing percentages that related to greater hot carcass weights with greater measurements of carcass fat compared to lambs fed alfalfa pellets.