

SELECTION FOR INCREASED LEAN MEAT YIELD DOES NOT INDEPENDENTLY IMPACT CONSUMER OVERALL LIKING OF LAMB

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Abstract - Consumer sensory testing is used to determine overall liking of lamb meat. Producers select for increased lean meat yield to increase profitability however this reduces intramuscular fat, and concurrently reduces consumer sensory scores. Therefore, it was hypothesised that increasing lean meat yield would reduce consumer overall liking. Untrained consumers undertook sensory testing on loin and topside samples collected from 346 lambs from Maternal sires. Consumer overall liking reduced by 7.8 scores across the 20% lean meat yield range for both cuts. However, this association was no longer present when corrected for intramuscular fat, indicating that it reflected the correlation between intramuscular fat and overall liking score, confirming intramuscular fat as a strong indicator of consumer eating quality.

Key Words – consumer, eating quality.

I. INTRODUCTION

Increasing lean meat yield in lambs is a key profit driver of production with consumers preferring lean cuts [1]. Selection for increased muscle and reduced fat using sire breeding values has been shown to increase lean meat yield in lambs [2] while concurrently reducing the amount of intramuscular fat in the meat [3]. Intramuscular fat is strongly linked to consumer sensory scores with a reduction in intramuscular fat resulting in a reduction in consumer overall liking [4]. Therefore, we hypothesised that increasing lean meat yield percentage will result in a reduction in the consumer overall liking score for lamb.

II. MATERIALS AND METHODS

Loin and topside samples were collected from 346 lambs, which were the progeny of 50 Maternal sires. Lambs were reared at the Kirby and Katanning sites of the Sheep Cooperative Research Centre Information Nucleus Flock in 2009 and 2010. Intramuscular fat content of the samples was determined using a near infrared procedure. Sensory testing was undertaken with untrained consumers, based on the Meat Standards Australia sensory system. Consumers rated overall liking of a meat sample from 0 to 100. Data was analysed using a linear mixed effects model in SAS with fixed effects for site, year of birth, birth type-rear type, cut (loin or topside) and kill group within site by year. Lean meat yield, calculated as the percentage of salable meat compared to the lean meat yield, and intramuscular fat were included as covariates. Sire identification, dam identification and consumer sensory tasting session were included as random terms.

III. RESULTS AND DISCUSSION

As hypothesized, there was an association between lean meat yield percentage and consumer overall liking score (Figure 1). Across the 20% lean meat yield range, increasing lean meat yield was associated with a 7.8 score reduction in consumer overall liking. The magnitude of this effect did not vary between loin and topside cuts. This response reflects the negative effect of lean meat yield on consumer eating quality scores as previously shown through the use of sire breeding values [4] and emphasizes concerns of further lean meat yield selection.

The association between lean meat yield percentage and consumer overall liking was no longer present when the model was corrected for intramuscular fat. These results indicate that despite the large range in lean meat yield percentage they are not divergent enough to drive an independent effect, and that the relationship with consumer overall liking is strongly driven through intramuscular fat.

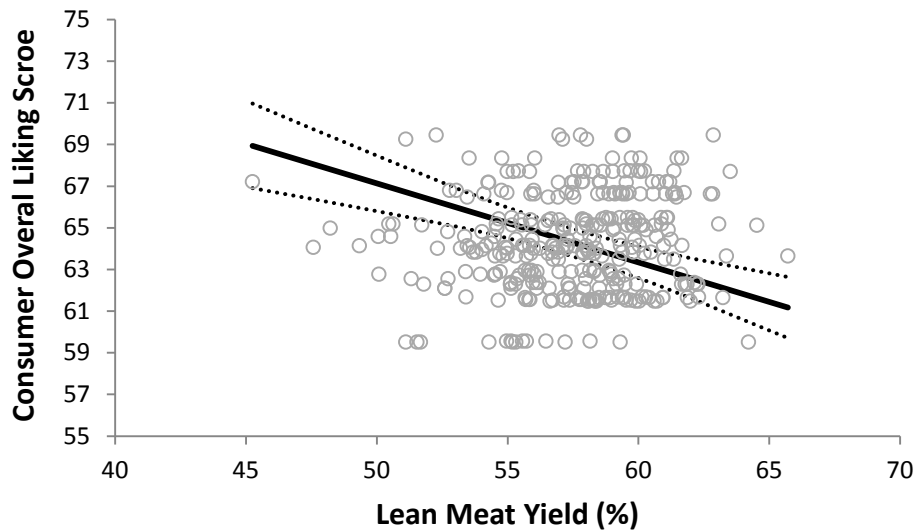


Figure 1 Association between lamb lean meat yield (%) and consumer overall liking score (0-100). The solid line represents the predicted mean for consumer overall liking score (\pm standard error) and the icons (o) represent individual sire estimates.

IV. CONCLUSION

An increase in lean meat yield percentage is associated with a decrease in consumer overall liking score. However, this relationship is no longer evident once the model is corrected for intramuscular fat, indicating that the relationship is driven by intramuscular fat rather than lean meat yield differences. This highlights intramuscular fat as a strong driver of consumer eating quality scores, but also shows that consumer eating scores should be monitored when selecting for greater lean meat yield.

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