

# FRENCH CONSUMER EVALUATION OF EATING QUALITY OF LIMOUSIN BEEF

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## I. INTRODUCTION

The Meat Standards Australia (MSA) system is an innovative meat-eating quality grading scheme, that is based on the prediction for eating quality of individual muscle cuts [1]. The MSA meat quality prediction model is underpinned by the eating quality evaluation and MSA quality grades assessment of beef by untrained consumers and is determined by Critical Control Points (CCPs) from breeding, production, pre-slaughter, slaughtering and post-slaughter processing, and value-adding aspects [1,2]. These inputs are used to predict a single meat quality score (MQ4), which is calculated by the combination of weighted tenderness, juiciness, flavour liking and overall liking and is ultimately related to the MSA quality grades selected by consumers. This study was based on the Meat Standards Australia (MSA) methodology. The aim was to evaluate the eating quality of Limousin beef across 2 muscles; the striploin and rump.

## II. MATERIALS & METHODS

Beef carcasses (n=102) were first graded according to the MSA protocol in a commercial slaughterhouse. Carcass evaluation was performed according to the MSA guidelines on the *M. longissimus dorsi* muscle at the 10<sup>th</sup> rib 24 h *post-mortem* by 2 chiller assessors. Two muscles samples (striploin and rump) were then collected, cut with a thickness 2,5 cm and aged for 10 days. Samples were grilled according to the MSA protocol for the consumer test and 480 untrained consumers assessed the quality of the steaks on a 0 -100 point scale for tenderness, juiciness, flavour and overall liking. Simultaneously, four quality classes were attributed to the steaks by the consumers. These classes were 2\*(Non-satisfactory), 3\*(Good every day), 4\*(Better than every day) and 5\*(premium) [1]. Calculation of the global eating quality score (MQ4) was done for each cut by combining tenderness, juiciness, flavour and overall liking according to the MSA methodology. In addition, prediction of the MSA index was performed using the MSA model and expressed on a 0 -100 point scale [3].

## III. RESULTS AND DISCUSSION

Results from the consumer tests were used to study whether the MSA model could predict eating quality of Limousin beef. Scores for tenderness, juiciness, flavour and overall liking differed between the two cuts, tenderness being much lower and juiciness much higher in the rump compared to the striploin (Figure 1). The MQ4 ranged from 42 to 83 for both cuts and the MSA index ranged from 53 to 58.5 and had an average value of  $51,46 \pm 2,89$ . The carcasses were then divided into three groups based on the MSA index. The first group included 25% of the carcasses with the lowest values of MSA Index, the third group included 25% of the carcasses with the highest values of MSA Index. The second group was constituted of the other carcasses with intermediate values of MSA index. The MSA index and the marbling score at the 10<sup>th</sup> rib were 15.2% and 28.7% higher respectively in the third group of carcasses compared to the first while ribfat thickness was 132,5% higher. Scores for tenderness, juiciness, flavour and overall liking as well as MQ4 were on average 14,4%, 11,7%, 8,7%, 10,5%, and 10,5% higher for the rump and 14,6%, 18,8%, 11,9%, 14,1% and 12,0% higher for striploin in the third group compared to the first one.

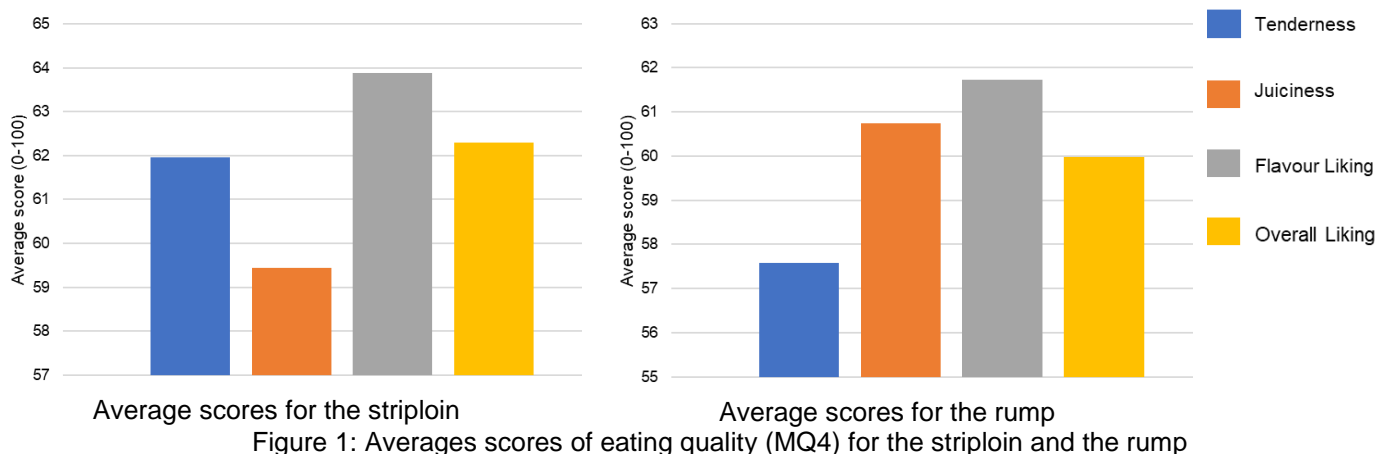


Table 1: Scores of tenderness, juiciness, flavour liking and overall liking for the striploin and the rump for the 25% of carcasses with the lowest and the highest potential quality based on the MSA index (correlations with the MSA index and differences between groups)

		Tenderness	Juiciness	Flavour liking	Overall liking	Level of satisfaction	MQ4
Striploin	Correlation with MSA index	0.18	0.28	0.28	0.25	0.30	0.22
	Carcases with lowest 25% MSA index	59.00	54.43	60.96	58.81	3.07	59.67
	Carcases with highest 25% MSA index	67.64	64.65	68.20	67.11	3.54	66.82
	P value (T test)	0.03	0.00	0.02	0.01	0.01	0.02
Rump	Correlation to MSA index	0.20	0.25	0.20	0.22	0.32	0.21
	Carcases with lowest 25% MSA index	53.18	58.39	59.63	57.34	2.74	57.18
	Carcases with highest 25% MSA index	60.85	65.22	64.80	63.39	3.25	63.23
	P value (T test)	0.03	0.01	0.07	0.04	0.02	0.04

#### IV. CONCLUSION

Overall, the results showed that the Australian MSA grading scheme might be relevant for Limousin cows when carcasses are graded at the 10<sup>th</sup> rib but may require improvements for carcass grading at the 5<sup>th</sup> rib as usual in Europe countries.

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