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Dry versus wet ageing of mutton and influence on loin and leg primal yield (#162)

Melindee Hastie[1], Robin Jacob[2], Steve Bonney[3], Long Huynh[4], Rod Polkinghorne[5], Hollis Ashman[1], Damir Torrico[1], Minh Ha[1], Robyn Warner[1]

[1] The University of Melbourne, Faculty of Veterinary and Agricultural science, Melbourne, Australia; [2] Western Australian Government, Department of Primary Industries and Regional Development, Perth, Australia; [3] Norlane Trading, Melbourne, Australia; [4] Meat and Livestock Australia, Sydney, Australia; [5] Birkenwood International Pty. Ltd., Melbourne, Australia

Introduction

Dry ageing of sheepmeat is a novel process, and farmer interest in this value adding process is strong. However, there is little information available on the impact of dry ageing on yield. Therefore, an investigation into the impact of dry ageing on yield in two primals, leg and loin, was conducted.

Methods

96 multipurpose merino ewes, ranging from 3-8 years of age, were slaughtered and hot carcase weight (HCWT) and fat score recorded. On the day after slaughter, the loins and legs from both sides were removed and processed into primals loins, (HAM number 4840), and legs, (HAM number 4810), as described by Ausmeat,2005. Legs and loins were assigned either to dry or wet ageing (bone-in for both) treatments and to ageing periods of 2, 4, 6 or 8 weeks. Dry ageing was conducted at 0 - 1.0oC, RH of 80-85%, airspeed 0.12 – 3.0 m/sec. Wet aged primals were vacuum packed into cryovac bags and aged in a cold room at 0.5 - 2.0oC. Legs and loins were weighed before ageing and at completion of designated ageing periods. Legs were boned into the retail ready cuts topside, silverside and knuckle ((HAM no.'s 5073, 5071, 5072 respectively; Ausmeat, 2005) and all retail cuts and waste were weighed. Loins were prepared into retail-ready racks; any remaining retail meat was excised and weighed, as was the waste. Yield components (Age loss, Trim loss and Saleable primal yield) were calculated as;

Age loss (ALt); the percentage weight loss over time for a primal, for a specified ageing period of t, where t= 2, 4, 6 or 8 weeks,

Trim loss (TLt); the percentage by weight of waste (bone and trim) removed to prepare the primal for retail, for a specified ageing period and Saleable primal yield.

Saleable primal yield (SPY); the proportion of primal (%) remaining after ALt and TLt are subtracted, representing the proportion of a primal that is saleable.

All statistical analyses were performed using REML in GENSTAT (16th Edition). For the analysis for the leg and loin, HCWT and fat score were initially included as covariates in separate models. For reporting the effects of ageing method and ageing time, HCWT was included as a covariate to enable standardization for this trait.

Results

Fat scores ranged from 2 (estimated tissue depth 6-10 mm;) to 5 (estimated tissue depth 20 mm and over) AUSMEAT, (2000), with 38.2% of carcasses rated fat score 2, 44.3 % as fat score 3, 6.2 % as fat score 4 and 1.4% as fat score 5). HCWT ranged from 22.8kg to 40.4kg with a mean value of 28.5. kg and SE = 0.297.

There was an interaction between ageing period and ageing method ($P<0.05$) for SPY for both leg and loin such that dry ageing was found to have reduced SPY compared to wet ageing, and this difference increased with time. AL was reduced for wet ageing in the leg and the loin ($P<0.05$ for both). When HCWT and fat score were separately included as covariates, HCWT influenced AL and TL for the loin, and SPY for the leg ($P<0.05$ for all; data not presented). Fat score influenced AL and TL for the loin and AL for the leg ($P<0.05$, data not presented). In general, TL increases and AL decreases for carcasses with higher HCWT, and with higher fat scores, respectively. SPY for the leg increased with increasing carcase HCWT. Table 1 and 2 give details of the influence of ageing method and ageing period on predicted means for the various components of yield for the loin and leg respectively, after adjustment for HCWT.

Conclusion

Given the significantly reduced yields associated with dry ageing, processors may consider a shorter ageing period to reduce the economic impact of yield reductions. However, this may need to be considered in conjunction with eating quality assessments in order to balance the economics of dry aged sheepmeat production and the delivery of a superior dry aged sheepmeat eating experience. Additionally, this trial has demonstrated the importance of ensuring the animals selected for dry ageing have fat cover of ≥ 3 and hot carcase weight > 28 kg which will result in improved yields. Also, carcasses with more subcutaneous fat may lead to an improved eating experience given the reduced surface area of lean meat exposed to the air and possible oxidation.

REFERENCES

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Ausmeat. (2005). Handbook of Australian meat: 7th ed. AUS-MEAT, Sydney Australia.

Notes

Yield component	Ageing method (AM)	Ageing period (AP)				SED	P -values		
		2 Weeks	4 Weeks	6 Weeks	8 Weeks		AM	AP	AM*AP
Age Loss (%)	Dry	13.7	20.0	21.9	22.7	0.7898	<0.001	<0.001	<0.001
	Wet	1.3	2.8	2.0	2.1				
Trim Loss %	Dry	55.7	54.8	57.0	55.0	1.463	0.006	<0.001	0.108
	Wet	67.9	63.1	69.1	67.0				
Saleable Primal Yield %	Dry	30.7	25.2	21.1	22.3	1.470	<0.001	<0.001	<0.001
	Wet	30.8	34.1	29.0	30.9				

Table 1:
Effect of ageing period (2, 4, 6, 8 weeks) and ageing method (dry vs wet) on loin yield

Table 1:
Effect of ageing period (2, 4, 6, 8 weeks) and ageing method (dry vs wet) on predicted means for components of yield for the loin,standardised for HCWT. The SED (standard error of differences) is for the interaction.

Yield component	Ageing method (AM)	Ageing period (AP)				SED	P -values		
		2 Weeks	4 Weeks	6 Weeks	8 Weeks		AM	AP	AM*AP
Age Loss (%)	Dry	13.1	18.2	21.5	22.4	1.301	<0.001	<0.001	<0.001
	Wet	2.8	2.7	2.0	3.3				
Trim Loss %	Dry-	35.1	29.6	35.7	36.7	1.117	<0.001	<0.001	<0.001
	Wet	33.7	21.0	24.4	23.0				
Saleable Primal Yield %	Dry-	55.3	56.6	48.6	43.9	1.244	<0.001	<0.001	<0.001
	Wet	65.7	77.9	74.0	75.1				

Table 2:
Effect of ageing period (2, 4, 6, 8 weeks) and ageing method (dry vs wet) on leg yield

Table 2: Effect of ageing period (2, 4, 6, 8 weeks) and ageing method (dry vs wet) on predicted means for components of yield for the leg, standardised for HCWT. The SED (standard error of differences) is for the interaction.

Notes