

## **Castrating Lambs Decreases Profitability**

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In mid season prime lamb production the objective is to achieve high levels of lamb performance cost effectively. High levels of lamb performance results in early drafting thus ensuring that all lambs are sold by the end of the grazing season. In Ireland, 73% of all lambs are sold between early May and late December. At lambing an imminent decision which is required is whether or not to castrate male lambs. There is a lot of evidence that leaving male animals uncastrated increases animals performance. However, there is a perception among some industry commentators, producer groups, marketers and meat processors that leaving male lambs entire may have a negative impact on subsequent meat eating quality. The aim of this paper is to present information on the effects of castration on male lamb performance and subsequent meat quality.

### **Rearing Males Entire Increases Performance**

There is a lot of evidence that leaving male animals entire increases animal performance and improves efficiency of production. For example, in beef production using bulls, and which are slaughtered at 24 months, instead of castrates increased carcass weight by 41 kg, carcass conformation classification (on a 5 point scale) by 0.4 points and reduced carcass fat classification (on a 5 point scale) by 0.7 points. A study was completed at Athenry on the effects of castrating male lambs on subsequent performance and carcass characteristics. This study was undertaken using 157 all-male litters in a mid-season prime lamb production system. In each of the all-male twins one lamb was chosen at random and castrated shortly after birth whilst its sibling was left entire. The effects of castration on animal performance are presented in Table 1. Leaving the male lambs entire increased weaning weight by 1.8 kg, reduced age at slaughter by 16 days and resulted in leaner carcasses. The reduced age at slaughter due to leaving male lambs entire, is similar to the response obtained from feeding 17 kg concentrate per lamb prior to slaughter.

The improvement in animal performance due to leaving male lambs entire occurred for no extra cost or labour input. The financial gain, from leaving male lambs entire, under current market conditions is equivalent to €6 per male lamb. The reduced fat classification is of benefit to consumers, as consumers have an aversion to fat when purchasing meat.

**Table 1. Effect of castration on subsequent lamb performance**

	Gender Category	
	Entire	Castrated
Growth rate (birth – 5 weeks, g/d)	282	256
Weaning weight (kg)	31.7	29.9
Sale date	8 August	24 August
Carcass weight (kg)	18.1	18.2
Kill-out (%)	43	44
Fat score	2.9	3.1

(Hanrahan, 1999)



**Entire lambs will be about 2 kg heavier at weaning than castrated lambs.**

### **Castration has no Benefit on Meat Quality**

There is a perception by some industry commentators, producer groups, marketers and meat processors that rearing male lambs entire may have a negative impact on meat eat quality. In 2010 Dr. Seamus Hanrahan, former Head of the Sheep Research Department, undertook an extensive review of research studies published in the past 25 years which compared meat from castrate and entire male lambs. This review was published in 2010 in TResearch. Studies from the following countries; France, United Kingdom, New Zealand, Australia, Canada and Iceland, many of which are the main producers of lamb worldwide were reviewed.

There is no simple definition of meat quality, and assessment can involve objective measurements, such as chemical composition, instrumental measures of tenderness and/or subjective evaluation by trained taste panels or in-home evaluation by families. In his review Dr Hanrahan included a British study in which meat from male lambs reared on pasture and slaughtered at 20 weeks of age was evaluated by a trained taste panel, and by consumers in their own homes. It was concluded from that study that whilst the carcasses from the entire males were 1.2 kg heavier they had significantly (23%) less fat. The trained taste panel failed to identify any difference in flavour, texture or overall acceptability. The consumer evaluations were undertaken in their own homes and the results are

presented in Table 2. The consumers concluded that meat from the entire males had better aroma and resulted in a better eating quality experience.

A subsequent British study, included in the review, evaluated leg joints from entire males slaughtered at 7.5 months and from castrate males, unweaned, slaughtered at 4 months. The comparison would be expected to favour the young castrates. The joints were evaluated by consumers in Britain, France and Iceland.

**Table 2. Consumer evaluation of home cook lamb from entire and castrate males**

	Aroma		Eating quality	
	Entire	Castrate	Entire	Castrate
Very much better than normal	33%	14%	34%	19%
Worse than normal	0%	0%	6%	17%

(after Hanrahan 2010)

The results presented in Table 3, conclude that the leg joints from entire males had a higher score for all aspects of the evaluation and a higher overall acceptability score.

**Table 3. Evaluation scores of British lamb evaluated by British, French and Icelandic consumers**

	Sex category	
	Entire	Castrate
Odour liking score	64.4	63.5
Flavour liking score	66.9	64.8
Tenderness liking score	62.3	60.2
Juiciness liking score	59.7	57.7
Overall acceptability score	66.0	64.6

(after Hanrahan 2010)

France is the main export market for Irish lamb. In the late 1990s a 2-year study was undertaken to address the concerns which French butchers had in relation to the declining quality of locally French-produced lamb carcasses in late autumn/winter. The meat trade there believed this decline in the meat quality of local lamb in late autumn/winter was due to the failure of producers to castrate males. The 2-year study concluded that castrating male lambs would not solve the problem and that factors other than gender were responsible for the late season decline in quality.

A recent study which was undertaken in New Zealand in the TRResearch review evaluated meat from male lambs reared as castrates or entire and slaughtered from 4 to 24 months of age. The study showed that there was no evidence of any effect on meat quality, whether male lambs were reared entire or as castrates, until 13 months of age. Dr. Hanrahan concluded from his extensive review of the literature that where lambs are reared on an all-grass diet and slaughtered by the end of the grazing season, leaving male lambs entire has no negative effect of meat quality, whether assessment is laboratory-based or through in-home consumer testing. It is often stated that no meat quality work on lambs was undertaken in Ireland. However, a study was undertaken in Northern Ireland in which hill lambs were finished on a range of systems. The castrate and entire lambs were 38 and 35 weeks old respectively when slaughtered. The effects of leaving male lambs entire on meat eating quality is presented in Table 4. Overall acceptability of meat from the entire male was higher than meat from the castrates.

**Table 4. Meat quality for entire and castrate male lambs**

	Sex category	
	Entire	Castrate
Intensity of aroma	49.9	53.4
Intensity of flavour	49.5	55.3
Juiciness	48	47
Tenderness	56.6	53.2
Overall acceptability*	3.40	3.75

\*3 = better than everyday quality, 4 = premium quality. (Carson et al., 2005)

## Summary

1. Leaving male lambs entire:
  - a. increases lamb performance
  - b. reduces age at sale by 16 days
  - c. increases margin per male lamb by €.
  - d. produces leaner carcasses
  - e. does not impact on meat eating quality
2. Based on an extensive review of published literature leaving male lambs entire that are reared on an all-grass diet and slaughtered prior to the end of the grazing season (December) has no negative effect on the eating quality of the meat.
3. Consumers have an aversion to fat, therefore, the leaner carcasses from entire males is of benefit when purchasing meat.

## **References**

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