# Lamb castration and tailing practices in New Zealand: results of a questionnaire

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## Abstract

There is a large body of literature that has examined the impacts of castration and tailing on lamb behaviour, stress response, pain and productivity (Fisher et al. 2010; Kent et al. 1993; Mellor et al. 2002; Mellor & Stafford 2000). Recently, Kerslake et al. (2015) investigated lamb tail docking, residual tail length and the reasons behind farmers' choice to dock. There is little information available, however, regarding castration methods and reasons for the choice of leaving lambs entire, castrated or short-scrotumed. A printed questionnaire was distributed to ~12,000 farmers on the Beef + Lamb New Zealand database. The questionnaire contained 30 questions on aspects of management of flystrike, louse control, tailing and castration. Information was sought regarding percentage of lambs tail docked, method used to remove tails, reason for the tailing decision, proportions of male lambs left entire or castrated or short scrotumed, the method used to castrate or short-scrotum, and the reason for choice of male lamb type. A total of 1253 (10%) of questionnaires were returned. Of the farmers that responded, the most commonly used tailing method was a hot iron (61%), followed by rubber rings (31.4%). Lamb growth was the primary reason that farmers gave for leaving lambs entire, and to a lesser degree short-scrotum. The reason behind the decision to castrate was most commonly related to lamb behaviour, however, a number of reasons had similar frequencies (lambs stay cleaner, infertility and meat quality).

**Keywords**: lamb; castration; tailing docking

## Introduction

Routinely in New Zealand, lambs are tail docked and ram lambs castrated or short scrotumed (Stafford 2013). These husbandry procedures are undertaken in order to reduce the incidence of flystrike (tail docking) or to restrict reproduction and facilitate management (castration or short scrotum) (Sutherland 2011). Both castration and tail docking are painful husbandry procedures that are commonly conducted without analgesia and, therefore, are a welfare issue (Kent et al. 1993; Mellor et al. 2002; Mellor & Stafford 2000). These painful procedures and the welfare implications are becoming a focus of attention for consumers, both in New Zealand and world-wide (Phillips et al. 2009). Indeed, it has been suggested that the use of these practices may become a barrier to overseas markets (Hughes 1995).

Recently tail docking, and in particular the length of tail, has been investigated in depth by Kerslake et al. (2015). In addition to collecting data on tail docking practices they examined the reasons for the farmers' choice to tail dock lambs and length of tail remaining (Martin-Collado et al. 2015). To date, however, castration practices used by New Zealand farmers have received little attention. This research, therefore, set out to examine the tailing and castration practices of New Zealand farmers. In addition, the reasons for these practices were also determined.

## Materials and methods

In October 2016, a questionnaire was distributed inside the Heartland Sheep issue of Country-wide magazine to ~12,000 farmers on the Beef + Lamb New Zealand database. The questionnaire contained 30 questions on aspects of management of flystrike, louse control, tailing and castration. The first seven questions of the questionnaire sought information on farmer demographics, i.e., location (regional council area), farmer age, stock units farmed, farm size, numbers of mixed age ewes, mixed-age-ewe lambing percentage and sheep breeds. The final six questions related to tailing and castration. The questions were 1) the percentage of lambs that were tailed in 2015, 2) the method used to remove tails, 3) the reason for removing tails or leaving them intact, 4) the proportion of male lambs that were left entire, castrated or short-scrotum, 5) the method used to castrate or short scrotum lambs and 6) the reason for choosing to have entire or castrated or short-scrotum male lambs. Questions 1 to 5 were open allowing respondents to write a response. Question 6 asked respondents to select one or more reasons from a list that included "Lambs are cleaner", "Behaviour", "Lamb growth rate", "Lambs intended to be sold store", "Infertility" and "Meat quality".

Due to the open-ended nature of the responses to question three, they were categorised as follows: "Animal health" = animal health, hygiene, less dags, less flystrike and lambs are cleaner. "Cost" = less labour, reduced costs. "Management" = ease of management, saves time, easier shearing/crutching, less dagging and easier breeding. "Historical" = always done it and common sense. "Lamb type" = sex of lamb, age of lamb, terminal-sired lambs, time of slaughter. "Buyer/works requirements" = works requirements or buyer requirements. "Aesthetics" = looks, unnecessary, tidy.

A total of 1253 (10%) questionnaires were returned of which 1224 were included in the analyses. Questionnaires were excluded if no response was provided for either percentage of lambs tailed or percentage of lambs that were entire, castrated or short scrotumed.

*Statistical analysis*

All statistical analyses were conducted using SAS (SAS Institute, Cary, NC, USA). The data were summarised by determining the frequency of respondents that used each tailing or castration method. For each method the frequency of farmers that gave each reason (behaviour, lambs are cleaner, lamb growth rate, infertility, meat quality or lambs sold store) was determined. The summarised data was then analysed using a generalised model with a binomial distribution. For the analysis of reason for tail docking, the outcome variable was the percentage docked (tailed 95% or more vs. tailed less than 95%). The model for castration reason included the fixed effect of male lamb type (entire, castrate or short scrotum).

**Table 1** The frequency (n) for each reason given for the choice to remove a lamb's tail or leave it intact and a comparison of the percentage (back-transformed mean with 95% confidence intervals) of respondents that gave each reason between farmers that did, or did not, tail dock 95% or more of their lambs.

| | n | Tail docked 95% or more of lambs | | No vs. Yes |
|---|---|---|---|---|
| | | No (n=94) | Yes (n=995) | |
| Health | 1400 | 38.6 (31.6 - 46.1) [d] | 59.7 (57.6 - 61.9) [e] | < 0.05 |
| Management | 722 | 15.8 (11.1 - 22.1) [b] | 30.8 (28.8 - 32.9) [d] | < 0.05 |
| Lamb type | 77 | 27.5 (21.3 - 34.7) [c] | 1.2 (0.8 - 1.8) [b] | < 0.05 |
| Other | 63 | 9.4 (5.8 - 14.7) [b] | 1.9 (1.4 - 2.6) [c] | < 0.05 |
| Cost/labour | 37 | 3.5 (1.6 - 7.6) [a] | 1.3 (0.9 - 1.9) [b] | 0.03 |
| Buyer/works | 62 | 2.9 (1.2 - 6.8) [a] | 2.5 (1.9 - 3.3) [c] | ns |
| Welfare | 32 | 1.8 (0.6 - 5.3) [a] | 1.4 (1 - 2) [b] | ns |
| Historical | 15 | 0.6 (0.1 - 4) [a] | 0.5 (0.3 - 1) [a] | ns |
| Aesthetics | 13 | --- | 0.5 (0.3 - 1) [a] | n/a |

[abcde] superscripts that differ within columns indicate that percentages were significantly different (P<0.05).

## Results

*Demographics*

The farmers that returned completed surveys and had usable data (n=1224) represented farms with a total combined effective area of 890,000 ha and 5.8 million stock units with a mean flock size of 2,280 ewes, an effective area of 751 ha and a lambing percentage (lambs tailed per ewe put to the ram) of 159%. The median age of the respondents was "50 to 59 years" of age with less than 10% of respondents being under 40 years of age. The majority of farms were located in the North Island (n=586), followed by the south of the South Island (n=329) and the north of the South Island (n=241) with the remainder (n=68) not providing location information. The vast majority of respondents (n=1107) farmed strong-wool breeds such as Romney, Coopworth and Perendale and crosses containing these breeds. Only a small number had either medium (n=35) or fine (n=38) wool breeds or shedding sheep (n=23). A small number of farmers did not indicate the breeds they farmed (n=21).

*Tailing*

Of the questionnaires returned 1089 (89%) respondents reported the proportion of lambs that they tail docked. Tail docking was common with 757 (62%) that docked 100% of their lambs and 995 (91%) that docked more than 95%. A small number of respondents (n=27, 2.5%) did not dock any lambs. A total of 1186 respondents, provided information on the tail docking method they used. The majority used only one method to tail dock lambs, using either a cauterising iron (n=721, 61%), rubber ring (372, 31.4%) or knife (n=10, 0.8%). A small number of respondents (n=83, 7.0%) used two methods, the most common being the cauterising iron and rubber ring (n=43, 3.6%) and rubber ring and knife (n=36, 3%). Although only a small number of farmers used a knife to castrate all lambs, 51 (4%) used a knife in conjunction with another method.

The reasons all respondents gave for their decision to tail dock lambs were predominantly related to animal health (58%, 95% CI = 56-60%) and ease of management (30%, 95% CI = 28-32%). Of the respondents that tail docked 95% of their lambs, a greater percentage gave reasons relating to animal health and ease of management (Table 1). For those that tailed less than 95% a greater (P<0.05) percentage of respondents gave reasons relating to cost/labour and lamb type.

*Entire or Castrated or Short scrotumed male lambs*

Based on the proportions reported by each respondent, the majority of lambs were short scrotumed (42%) with similar proportions left entire or castrated (29% and 25%, respectively). Of the 1224 respondents, 1191 (97%) reported the proportions of male lambs that were left entire, castrated or short scrotumed. From these proportions it was calculated that 35% (n=423) of respondents castrated some or all lambs, 48% (n=587) short scrotumed and 52% (n=638) left lambs entire. The majority either only castrated (n=196, 16.5%), short scrotum (n=310, 26.0%) or left lambs entire (n=269, 22.6%). Some farmers, however, had more than one type of male lamb, for example, 15.9% (n=189) had entire and short-scrotumed lambs, 9.8% (n=117) had entire and castrated lambs, 4.0% (n=47) had castrated and short-scrotum lambs. There were a small number of farmers that had all three male lambs types (n=63, 5.3%).

When asked for reasons for choosing to leave lambs entire, lamb growth rate was cited by the majority of farmers (Table 2). Similar percentages (P>0.05) of respondents gave "Lambs sold store", "Meat quality" and "Lambs are cleaner" as reasons for their choice to leave lambs entire. The decision to castrate was most commonly chosen for lamb behaviour reasons. Similar percentage of respondents choose "Cleaner", "Infertility" and "Meat quality" as the reason for their decision to castrate. The most commonly cited reason for short scrotum lambs was "Lamb growth rate". Similar percentages (P>0.05) of farmers cited "Behaviour", "Lambs are cleaner" and "Infertility" as reasons for their choice.

**Table 2** The frequency (n) for each reason for the choice to have entire, castrated and short scrotum lambs and a comparison of each reason (back-transformed mean with 95% confidence intervals) given by farmers for having entire (Ent), castrated (Cast) or short-scrotumed lambs (SS).

| Reason given | Male lamb type | | | | | | P-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Entire | n | Castrate | n | Short scrotum | Cast vs. SS | Cast vs. Ent | SS vs. Ent |
| Behaviour | 42 | 6.1 (4.6 - 8.2)$^{b}$ | 266 | 24.1 (21.6 - 26.7)$^{d}$ | 302 | 16.2 (14.6 - 18)$^{b}$ | ** | ** | ** |
| Lambs are cleaner | 65 | 9.4 (7.4 - 11.8)$^{c}$ | 191 | 17.3 (15.2 - 19.6)$^{c}$ | 317 | 17 (15.4 - 18.8)$^{b}$ | ns | ** | ** |
| Lamb growth rate | 423 | 59.9 (56.2 - 63.6)$^{d}$ | 98 | 8.9 (7.3 - 10.7)$^{a}$ | 466 | 25.1 (23.1 - 27.1)$^{c}$ | ** | ** | ** |
| Infertility | 25 | 3.5 (2.4 - 5.2)$^{a}$ | 193 | 17.5 (15.3 - 19.8)$^{c}$ | 339 | 18.2 (16.5 - 20.1)$^{b}$ | ns | ** | ** |
| Meat quality | 71 | 10.4 (8.3 - 12.9)$^{c}$ | 216 | 19.5 (17.3 - 22)$^{c}$ | 232 | 12.5 (11.1 - 14.1)$^{a}$ | ** | ** | ns |
| Lambs sold store | 73 | 10.7 (8.6 - 13.2)$^{c}$ | 142 | 12.8 (11 - 14.9)$^{b}$ | 204 | 11 (9.6 - 12.5)$^{a}$ | ns | ns | ns |

$^{abcd}$ *within columns superscripts that differ indicate that percentages were significantly different (P<0.05).*
ns = not significant (P>0.05), * = P<0.05, ** P<0.01, *** P<0.001

## Discussion

The aim of the current study was to investigate the tailing and castration practices of New Zealand sheep farmers and to determine the reasons behind the use of each method. The response rate in the current study was relatively low at 10%, however, due to the questionnaire being sent to every sheep farmer New Zealand, it generated more than 1,200 responses which has created a significant database of information on farmer practices.

The farmers that returned completed questionnaires farmed an average effective area similar to those that completed previous questionnaires conducted by our group (862 ha for a questionnaire in 2014 and 607 ha in 2012; Corner-Thomas et al. 2015; 2016). The farmers that completed the questionnaire had larger farms and had higher lambing percentages than the average New Zealand farm which has an effective size of 250 ha with an average flock size of 1,588 and a lambing percentage of 127% (Beef + Lamb NZ 2016). The age distribution of the farmers that returned a completed questionnaire was similar to that reported in the questionnaires conducted in 2012 and 2014 with the median age of "50 to 59 years" of age (Corner-Thomas et al. 2016).

Tail docking was a common practice amongst the farmers that completed the questionnaire with the majority (62%) docking 100% of lambs with a small number (2.5%) that did not tail dock any lambs. These results contrast with those of Kerslake et al. (2015) who reported that 6% of respondents tail docked 100% of their lambs and 1.4% did not tail dock any. It is possible that the differences in the findings of these studies were the result of the differences in the method of distribution of the questionnaires (postal vs. online) resulting in a different demographic of farmers (Casey et al. 2016; Corner-Thomas et al. 2017). The tail docking methods used by the farmers in the current study, however, were similar to those reported by Kerslake et al. (2015) with approximately 60% of farmers using a cauterising iron and 30% using a rubber ring. Somewhat surprising was that 4% of respondents tail docked lambs with a knife (surgical amputation). Although not actively discouraged, the animal-welfare painful-husbandry procedures code of animal welfare (Anon. 2005) noted that surgical techniques are associated with greater risks of bleeding and infection.

The primary reason cited for tail docking lambs was animal health, which included responses relating to minimising flystrike, minimising dags, having cleaner lambs and animal health. Kerslake et al. (2015) and Fisher et al. (2006) also reported a similar result with farmers that docked lambs ranking minimising flystrike followed by reducing dags and reducing crutching costs as the three most important reasons for their docking practices. It is perhaps unsurprising that minimising flystrike and dags are often given as a reason to tail dock given that docking has been shown to reduce the incidence in flystrike (French et al. 1994; Webb-Ware et al. 2000).

In the current study, 35% of farmers had more than one male lamb type (entire, short-scrotum and castrate) on their farm. This finding is in agreement with that of Tarbotton et al. (2002) who reported 30% of farmers had more than one type of male lamb. The variation in the percentages of each male lamb type are likely due to the intended final use of the animal. Lambs that will be sold to slaughter soon after weaning are more likely to be left entire, as management of fertility is not required, whereas lambs kept on farm into the breeding season requires management of fertility and behaviour (Johnson et al. 2017). Many farmers (65%), however, chose to have only one male lamb type.

The reasons cited for the choice of entire, short scrotum or castrated lambs differed between farmers. Farmers that left some or all lambs entire or short scrotum commonly gave lamb growth rate as a reason for their choice, whereas, farmers that castrated lambs commonly cited lamb behaviour. This finding is similar to that of Tarbotton et al (2002) who reported that the most common reason given to cryptorchid or leave lambs entire was better growth, however, for castration the most commonly given reason was convenience (fast, easier). In the questionnaire conducted by Tarbotton et al. (2002), behaviour was only given by 8% of respondents as a reason to castrate.

## Conclusion

Tail docking and castration practices of New Zealand farmers reflect the diverse nature of the sheep-production

systems, with farmers utilising a range of tailing and castration practices. The reasons for the choice of tailing practice primarily centred on animal health and, in particular, reducing dags and risk of flystrike. Lamb growth was the most commonly cited reason for leaving lambs entire and short scrotumed, however, behavioural reasons were most common for castration.

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