Justifying the appropriate length for docking lambs' tails - a review of the literature

M. W. FISHER, N.G. GREGORY[1], J. E. KENT[2], D. R. SCOBIE[3], D. J. MELLOR[4] AND J. C. POLLARD[5]

Kotare Bioethics Ltd, PO Box 2484, Stortford Lodge, Hastings, New Zealand.

ABSTRACT

It is generally accepted that tail docking is beneficial in farming systems where sheep are predisposed to dag formation and flystrike, but that it is a stressful procedure. Although there have been many studies of tail docking, relatively few have looked at the effects of different tail lengths. The incidence of flystrike depended on tail length, being least in medium-, and greatest in short-tail docked sheep. Short-tail docked ewes had higher rates of carcinoma of the vulva and short-tail docked lambs had a greater incidence of rectal prolapse. In some cases, increased tail length was associated with increased dags, and with longer tails crutching and shearing effort was greater. There apparently have been no studies documenting the effects of docking at different lengths on the welfare of the lamb at the time of docking, on muscle anatomy, or on defecation and urination. Furthermore, the results obtained in some studies were confounded by differences in breed (e.g. Merino) and mutilations (e.g. mulesing), which question the validity of extrapolating their conclusions to New Zealand conditions.

Keywords: tail; docking; dags; flystrike; health; welfare.

INTRODUCTON

The tails of domestic sheep may be fat (e.g. Awassi), short (e.g. Finnish Landrace), or thin (e.g. Romney). A long tail may lead to faecal soiling and urine staining and increased susceptibility to flystrike (e.g. French *et al.*, 1994). Tail-docking has thus been a regular part of animal husbandry.

Removal of the tail has the potential to affect many aspects of the animal's anatomy, physiology, behaviour, farm management, and production, as well as susceptibility to dag formation, urine staining and consequent flystrike. The procedure is also painful, resulting in up to 3-4 hours of physiological and behavioural changes, some of which indicate distress (e.g. Mellor & Murray 1989). Therefore it is important that docking be undertaken properly, the benefits of tail removal must outweigh the harms and those harms should be minimised. Similarly, alternatives to tail removal must be considered. Considerable effort has been spent investigating some harms associated with tail removal (see Molony & Kent, 1997; Mellor & Stafford, 2000). Somewhat surprisingly, the length at which the tail is docked has not been adequately investigated.

The objective of this review is to examine the effects of docking lambs tails at different lengths. This analysis is part of an investigation into differences between animal welfare guidelines (the docked tail should be long enough to cover the tip of the vulva in ewe lambs and at a similar length in males - AWAC, 1996) and common farm practices (docked tails are often very short leaving little or no tail – Pollard, 2002). In order to compare different studies, the following categories of tail length were adopted: No tail (docked as short as possible leaving little or no tail); Short (intermediate between No tail and Medium); Medium (covering the tip of the vulva in ewe lambs and at a similar length in males); and Long (docked at any length longer than Medium). The consequences of these lengths for dag formation and flystrike, health and welfare, anatomy and behaviour, and for production, and management practices were then evaluated.

Dag formation, urine staining and flystrike

Two experiments have investigated tail length and dags in lambs in New Zealand, using a 0-5 scale to score the presence and extent of dags. In the Wairarapa (Pomroy *et al.*, 1997) and Canterbury (Scobie *et al.*, 1999), there was little effect of tail length on dag scores although most lambs had few dags (range 0-2 in the former, means of 0-1.3 in the latter). In Australia, there was a marked increase in dag formation with increasing tail length in Corriedales (Graham *et al.*, 1947; see Table 1), and in mulesed Merino lambs dosed with purgative (Watts & Marchant, 1977). In the latter work, where 71-72% of all sheep had dags, more animals with No tail had heavy and wet dags (wet soiling down to skin level) than did those with Medium tails (28% vs 13%, respectively).

Urine staining in ewes was also affected by tail length (Graham *et al.*, 1947), with the least number of stained

[1] Royal Veterinary College, Hawkshead Lane, North Mymms, Hatfield, Herts, U.K.
[2] Royal (Dick) School of Veterinary Studies, Edinburgh University, Summerhall, Edinburgh, U.K.
[3] AgResearch Lincoln, PO Box 60, Lincoln, N.Z.
[4] Animal Welfare Science and Bioethics Centre, Massey University, PB 11222, Palmerston North, N.Z.
[5] AgResearch Invermay, PB 50034, Mosgiel, N.Z.

sheep noted in those with Medium tails (Table 1). It has been suggested that longer tails tend to press apart the wool in inner breech folds, therefore resulting in a wider opening of the vulva and better clearance for urination (Ritches, 1941).

Information on flystrike and tail length is limited to Merinos in Australia. However, it is clear that shorter tails predispose these animals to flystrike (Table 1; for simplicity, data from male and female lambs, and breech and tail strikes have been combined, although it is noted that there were differences in some studies.) The most comprehensive study was undertaken by Riches (1941, 1942) over three years where fly activity was high (1938-39), minimal because of drought (1939-40), and high (1941). A Medium length tail permanently reduced both breech and tail strike compared with shorter tails (Table 1). This study confirmed earlier observations (Gill & Graham, 1939) that sheep with shorter tails had significantly higher rates of flystrike. Furthermore, when dosed with purgative, both mulesed and unmulesed Merino lambs with shorter tails were also more strongly predisposed to flystrike (Watts & Marchant, 1977; Watts and Luff, 1978).

Health and welfare

Several indicators of health and welfare suggest that short tails compromise the animals in some circumstances, again in studies carried out mainly in Australia (see Table 1). When the tail was removed surgically, a longer tail resulted in less infections of the wound six days after removal. This pattern was also reflected in the degree of healing. Lambs with Medium tails showed good healing, whereas lambs with No tail healed poorly and Short tails were intermediate (Johnstone, 1944). A short tail also predisposed up to 17% of sheep to cancer of the tail region, mainly the vulva (Vandengraaff, 1976; Hawkins *et al*., 1981; Swan *et al.*, 1984). Prolapse of the rectum is more common, in both male and female lambs when tails are very short (8%) at least in the USA when animals are finished with concentrate diets on feedlots (Thomas *et al.*, 2003). However, the incidence of vaginal prolapse (0-6%) does not appear to be affected by tail length, at least when tail lengths range between 1 and 5 cm in adult ewes on Hawke's Bay and Southland farms (Hilson *et al.,* 2002).

Anatomy and behaviour

As the tail anchors rectal and reproductive tract musculature, severing these muscles could alter urination, defecation and the ability to undertake behaviours such as tail-wagging. Johnstone (1944) noted that the tail muscle terminated at a point corresponding to the posterior limit of bare skin on the ventral surface of the tail, approximately 4 inches (10 cm) from the root of the tail. When the lamb is docked at the Medium length, little muscle tissue was cut. The contribution that a mobile tail may make to preventing flystrike of the perineal region is unknown but the musculature might enable the animal to twitch its tail to deter flies (Ritches, 1941). Interestingly, tail docking may prevent cows from deterring flies (Phipps *et al.*, 1995; Eicher *et al.*, 2001). Docking tails longer may allow the bare skin of the tail to cover the anus and vulva, rather than wool overhanging, thereby protecting the perineal region in some way (Gill & Graham, 1939). For many breeds, this bare skin area on the ventral surface of the tail extends for some distance from the root of the tail (D.R. Scobie & D. O'Connell, unpublished data).

Animal production and management

There are apparently no comprehensive studies of the effects of tail length on animal production. However, neither wool growth nor lambing percentage appear to be overly affected by tail length (Riches, 1942; Scobie *et al.*, 1999). Slightly more effort is required to crutch and shear sheep with Medium and Long tails compared to those with shorter tails (Table 1).

DISCUSSION

The current review highlights two features about tail lengths in sheep. The first is that, perhaps with the exception of dags and the effort required to remove them, a tail of medium length (to cover the tip of the vulva in females and at a similar length in males) seems to most effectively reduce susceptibility to flystrike and health problems. In contrast, most New Zealand lambs are docked much shorter, many with little or no tail (Pollard, 2002; M.W. Fisher, unpublished data). This difference may reflect the importance farmers attach to removing dags, particularly if considerable effort is required to do so. Alternatively, it may be that flystrike, health and welfare issues are not readily perceived as being associated with tail length, at least not as readily as is the presence of dags. For example, a producer may dag or crutch his lambs several times but only treat a small proportion of them for flystrike in a very bad season. Graham *et al.* (1947) clearly showed that the proportion of daggy sheep increased with increasing tail length. Although Scobie *et al.* (1999) were not able to demonstrate such a clear relationship, they did show that longer tails were slower to shear and slower to crutch and that the presence of dags exacerbated this. Not surprisingly, dagging apparently assumes prominence and is not outweighed by observations of reduced flystrike, healing, perineal carcinoma and rectal prolapse with longer tails (Table 1).

The second feature is the paucity of knowledge in this area. In addition to those issues noted above, it is not known whether there are differences in acute pain and distress caused by docking tails at different lengths. The pain could also be dependent upon whether the tail is severed through a vertebra or at an intervertebral space (Graham *et al.* 2002). Nor have the chronic effects of such docking on factors such as nerve regrowth and neuroma formation been investigated. Neither is it known if there is

TABLE 1: Effects of tail length of sheep on the presence of dags, flystrike, health issues, and production and management practices from several studies undertaken in New Zealand, Australia and the USA.

Tail length	No tail	Short	Medium	Long	Reference; country
Dags, staining & flystrike					
Dags (0 = none, 5 = most)					
Experiment 1	0-0.5		0-0.6	0-0.7	Scobie *et al.* (1999); NZ
Experiment 2	0.3-1.1		0.8-1.3	0.7-1.6	
Dags (%)	8	15	35	52	Graham *et al.* (1947); Aust.
Urine staining (%)	98	92	83	91	Graham *et al.* (1947); Aust.
Flystrike (%) 1938-39	19-61	17-56	5-32		Riches (1941, 1942); Aust.
1939-40	0-8	0-7	0-2		
1941	51	33	14		
Health & welfare					
Tail infection (%)	96	64	13		Johnstone (1944); Aust.
Perineal carcinoma (%)	17	1-6	0		Swan *et al.* (1984)
Rectal prolapse (%)	8	2-4			Thomas *et al.* (2003); USA
Management					
Shearing - blows	41		41	41-48	Scobie *et al.* (1999); NZ
- time (sec)	60		62	63-72	
Crutching (min / 12 lambs)					
. - no dags	5.2		6.2	7.4-8.4	Scobie *et al.* (1999); NZ
- dags	8.2		10	12-12.8	

a relationship between tail length and long-term liveweight change, although tail-docking can have detrimental, albeit transient, effects on lamb growth (e.g. Webb Ware *et al.*, 2000). The effects of tail docking on lactation performance, including predisposition to, or protection from diseases such as mastitis is also unknown. Finally, there is also no indication of any special requirements or opportunities for processing animals with different tail lengths. Some of these factors are currently being explored.

There are some observations of regional differences in tail docking practices. In hill areas in Scotland, very little of the tail may be removed, to prevent wool balls from forming around the tip of the tail. In lowland areas, the greater part of the tail may be removed (Williams, 1999). In out-of-season production systems in eastern New Zealand, some lambs are not tail docked at all, presumably because they are slaughtered before flystrike becomes an issue (MW Fisher, unpublished observations). The opportunity to enhance animal production and welfare through realising seasonal, regional, breed, and sex differences in the need to tail dock at a particular length, or even to dock at all, is largely unexplored.

Current animal welfare recommendations would appear to be based largely on studies undertaken in Australia, mainly with Merinos, and occasionally using experimental protocols unrelated to farming practices. Accordingly, extrapolating such knowledge to New Zealand conditions should be done with caution. Especially since many factors may contribute to conditions such as flystrike, it would be unwise to dismiss the part tail length may play in causing or exacerbating them. The relationship between flystrike and tail length in New Zealand in particular needs to be examined in more detail. It is also necessary to determine why most New Zealand lambs are docked at lengths far shorter than is recommended by animal welfare authorities, both here and internationally, and if necessary to modify this practice.

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[1] Royal Veterinary College, Hawkshead Lane, North Mymms, Hatfield, Herts, U.K.
[2] Royal (Dick) School of Veterinary Studies, Edinburgh University, Summerhall, Edinburgh, U.K.
[3] AgResearch Lincoln, PO Box 60, Lincoln, N.Z.
[4] Animal Welfare Science and Bioethics Centre, Massey University, PB 11222, Palmerston North, N.Z.
[5] AgResearch Invermay, PB 50034, Mosgiel, N.Z.

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