



Early season treatment and the control of breech strike in unmulesed sheep

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Background:

- 1) With unmulesed merinos in SE Australia:
 - ↑'d dag, wrinkle & stain → increased risk of breech strike
 - Modified management – crutching, shearing, ↑'d supervision
 - ↑'d reliance on chemicals
- 2) Opportunity for better timing of chemical applications ('IPM'):
 - Routine treatments given to 50% weaners & 40% ewes (IPM-s survey)
 - Fly life-cycle → Early season treatment
 - no adult flies during winter
 - overwintered larvae emerge as adult flies in Sep-Oct



L.cuprina life-cycle:

Eggs → 1st → 2nd → 3rd instars → wandering larvae
(leave sheep 4-5 d after eggs laid)

Arrested develop't in Apr-May

prepupae → pupae → adult fly
(12 days after eggs laid)

resume develop't in Aug-Sep &
adult flies emerge in Sep-Oct



Main aims of study

- 1) Measure the prevalence of breech strike in unmulesed sheep given an early season long acting treatment
- 2) Compare prevalence of breech strike of clipped sheep with the 'gold standard' (mulesed sheep) [\[both groups treated tactically\]](#)
- 3) Compare indicator traits, management & costs/ returns of the 3 groups

Study design (2008-2011)

- Three treatment groups on 3 farms
 - 300-400 sheep/ group
 - Ewes only Farms 1 & 3, wethers also on Farm 2
- Group 1 – ‘Mulesed + tactical treatment’ of Spinosad when required
- Group 2 – ‘Clipped + tactical treatment’ of Sinosad when required
- Group 3 – ‘Not mulesed + early season long acting treatment’ (dicyclanil (Clik™) in Sep-Oct)



Summary of flocks

Spring-lambing merino flocks:

- 1) Coleraine, 680 mm; 18.5 micron – breeds own rams using an index, shears March (wnrs Mar)
- 2) Ballarat, 620 mm; 17.5 micron – traditional fine wool base flock, recently started breeding own rams, shears Dec
- 3) East Gippsland, 600 mm; 18.5 micron – medium-fine wool base & Hazeldean rams, shears Dec (wnrs March)



Observations

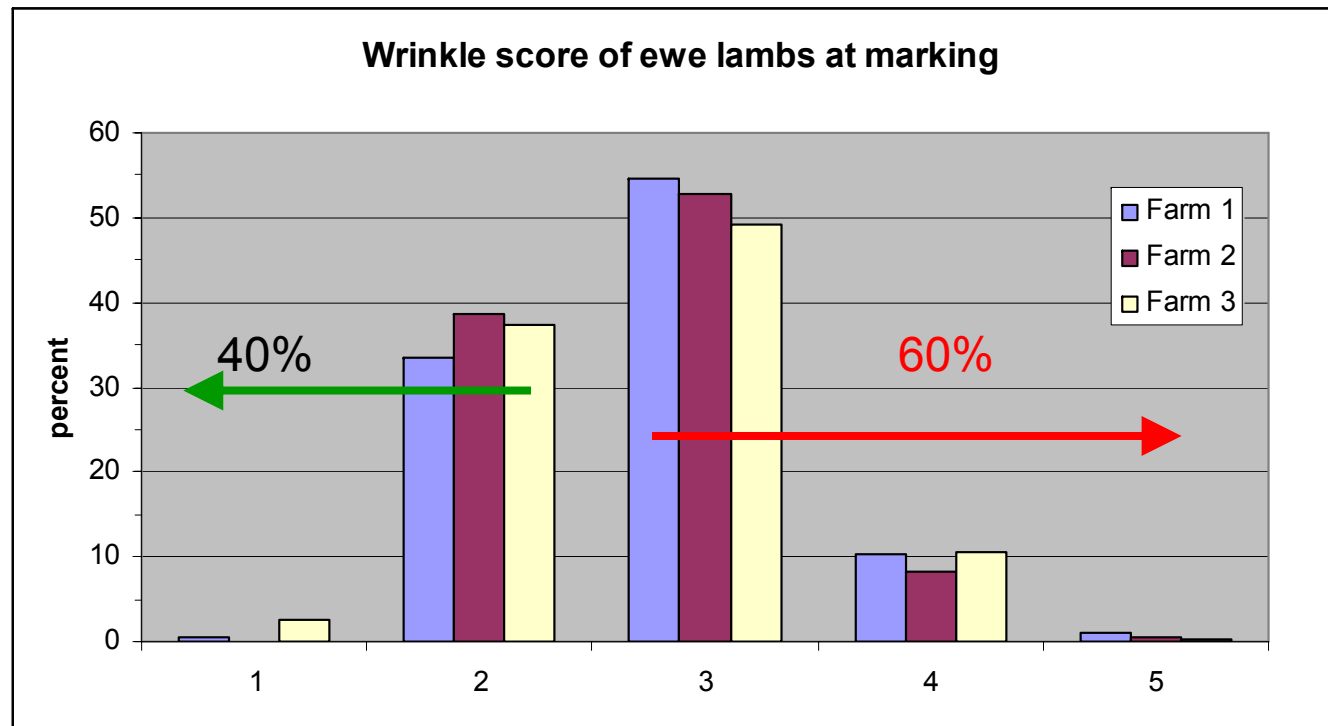
- 1) Prevalence of breech strike in spring
- 2) Indicator traits:
 - a) Dag & urine stain
 - b) Breech wrinkle
 - c) Breech bare area scores & measurements
- 3) Production/ welfare:
 - a) Time to crutch & shear
 - b) Bodyweight, fleece weight, weight of crutchings
 - c) Breech cuts
- 4) Fly numbers (Lucitraps™)

Visits – Farm 1

Visit	BWt	Dag	Stn	Wr	Bare	Strike	Cuts	DWt/ GFW	Time (s)
Mark - Oct08	✓	✓	✓	✓	✓				
Wean - Dec08	✓	✓	✓		✓	✓			
Feb 2009	✓	✓	✓			✓			
Mar - Crutch						✓		✓	✓
Mar - Shear								✓	
Oct - Early treat't	✓	✓	✓						
Dec - Crutch		✓	✓			✓	✓	✓	✓
Mar10 - Shear								✓	✓
Apr - Pre-join	✓	✓	✓	✓	✓M				

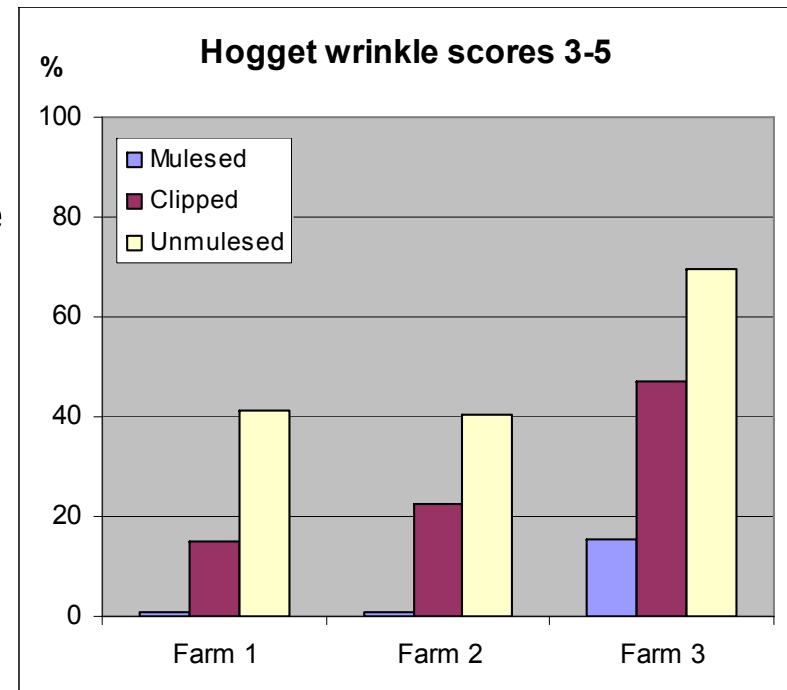
Results - Breech wrinkle score at marking

- Average wrinkle scores = 2.8, 2.7 & 2.7 on Farms 1-3
- A high proportion of sheep are susceptible (score ≥ 3)



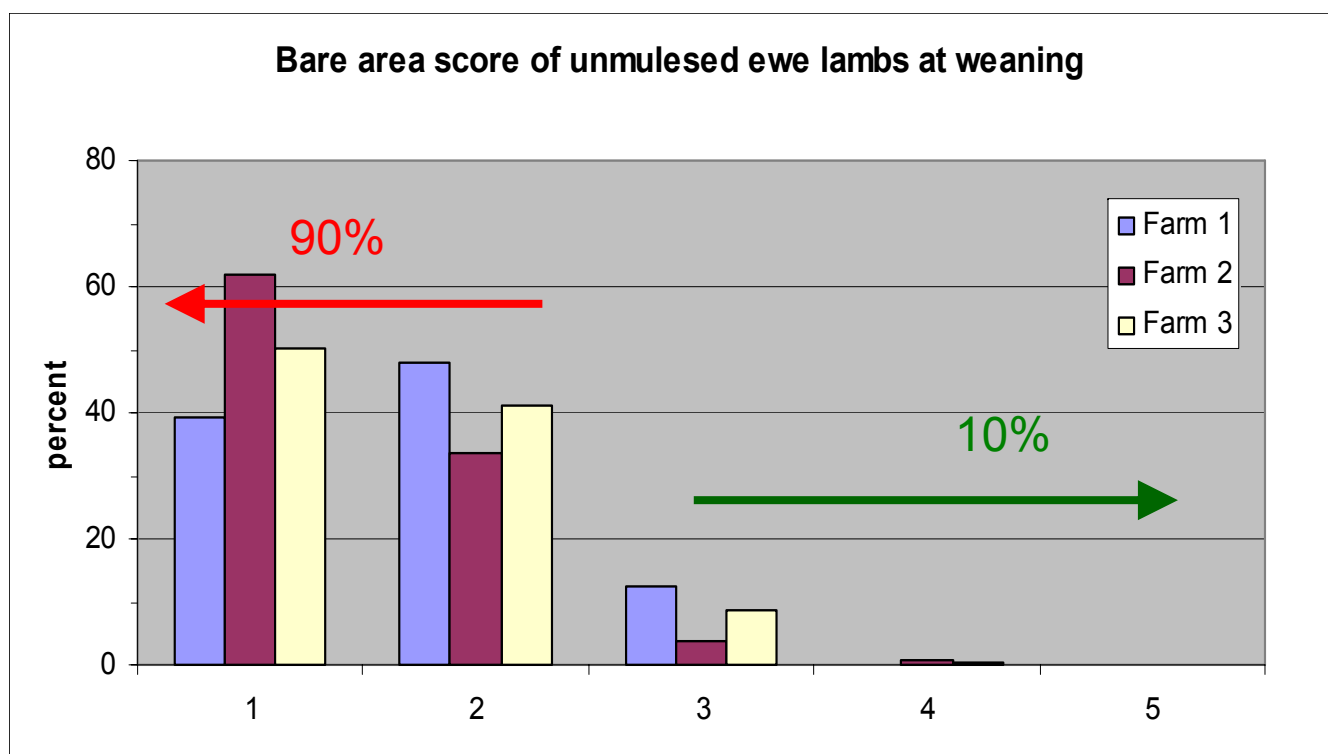
Breech wrinkle at hogget age

- 1) In unmulesed groups:
 - Average scores = 2.4, 2.5 & 2.9
 - 40-70% \geq score 3
- 2) Mulesing effectively reduced wrinkle score: by 1.0 Wrinkle Score
 - average = 1.4, 1.3 & 2.0
- 3) Clipped group intermediate on all farms: reduced wrinkle score by 0.3 Wrinkle Score
 - average = 2.0, 2.3 & 2.6



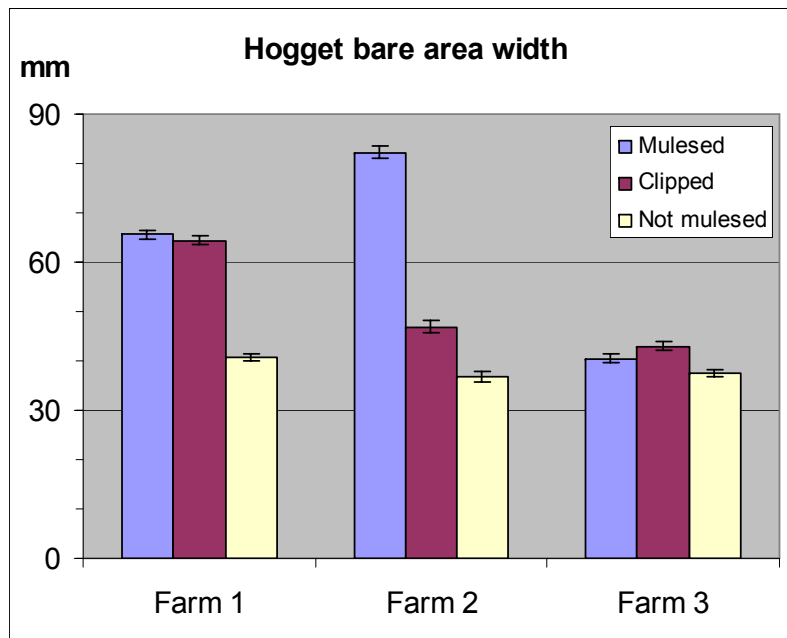
Bare area score at weaning

- Not much variation
- Average bare score of unmulesed = 1.9, 1.4 & 1.6



Bare area measurements as hoggets

- For clipped compared to unmulesed:
 - Only modest increases in width to date (+24mm, +10mm & +6mm)
 - No significant increase in depth



Breech strike at 14-16 m.o.

Farm	Date	Group	Prevalence of Breech strike
1	17-Dec-09 [^]	Mulesed	
		Clipped	
		Not mulesed	1.1% (3/ 279)
2	10-Feb-10 [^]	Mulesed	
		Clipped	
		Not mulesed	0% (0/ 235)
3	7-Dec-09 [^]	Mulesed	
		Clipped	
		Not mulesed	0% (0/ 318)

[^] 12, 16 & 12 weeks after Klik™ treatment

Note: only Not mulesed group were treated with (dicyclanil Klik™) in Sep-Oct

Breech strike at 14-16 m.o.

Farm	Date	Group	Prevalence of Breech strike
1	17-Dec-09	Mulesed	0.4% (1/ 281)
		Clipped	11.3% (33/ 292)
		Not mulesed	1.1%
2	10-Feb-10	Mulesed	
		Clipped	
		Not mulesed	0%
3	7-Dec-09	Mulesed	2.9% (9/ 313)
		Clipped	5.7% (25/ 327)
		Not mulesed	0%

Driven by dag,
then wrinkle,
(then stain)

Note: only Not mulesed group were treated with (dicyclanil Klik™) in Sep-Oct

Breech strike at 14-16 m.o.

Farm	Date	Group	Prevalence of Breech strike
1	17-Dec-09	Mulesed	0.4%
		Clipped	11.3%
		Not mulesed	1.1%
2	10-Feb-10 [^]	Mulesed	0% (0/ 245)
		Clipped	1.7% (4/ 234)
		Not mulesed	0%
3	7-Dec-09	Mulesed	2.9%
		Clipped	5.7%
		Not mulesed	0%

Driven more by wrinkle

Farm 2 had low stain and low dags

Note: only Not mulesed group were treated with (dicyclanil Klik™) in Sep-Oct

Autumn breech/ tail/ body strike on Farm 2



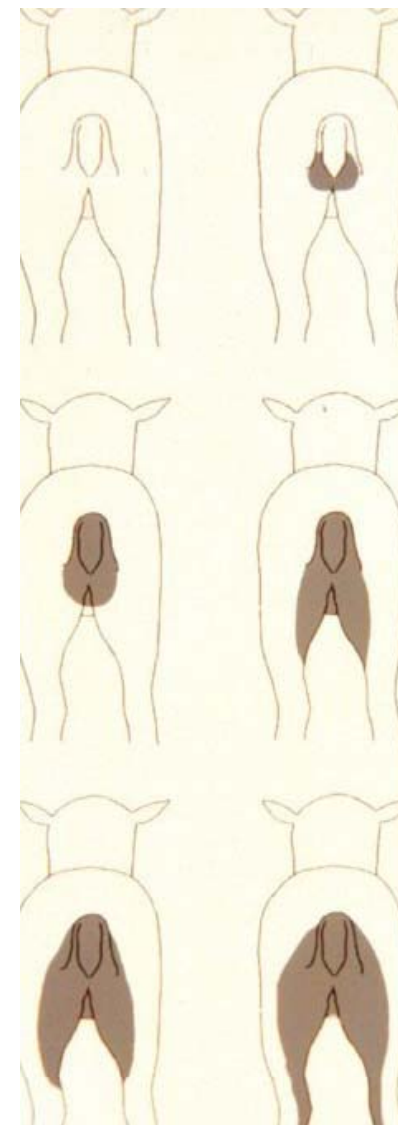
Autumn breech/ tail strike on Farm 2

Date/ mob	Group	Strikes	DS [Wr]	
			≤ 2	≥ 3
10 Feb to 8 May (Ewes)	Mulesed	0.4% (1/245)	1	0 [1]
	Clipped	8.1% (19/234)	17 [11]	1 [8]
	Not mulesed	3.4% (8/235)	7 [2]	1 [6]

Dag score

- Clipped group intermediate for hogget dag scores on 2 of 3 farms

Farm	Average Hogget Dag Score (0-5 scale)		
	Mulesed	Clipped	Not mulesed
1 – Dec	1.1 ^a	1.9 ^b	2.3 ^c
2 – Sep	0.7	0.6	0.8
3 – Nov	2.6 ^a	2.9 ^b	3.3 ^c



Each 0.1 reduction in dag score reduces breech flystrike

Hogget dag score

- Clipped group intermediate for hogget dag score on 2 of 3 farms

Farm	Average Hogget Dag Score (0-5 scale)		
	% with severe dag (DS ≥ 3)		
	Mulesed	Clipped	Not mulesed
1 – Dec	1.1 ^a	1.9 ^b	2.3 ^c
	13%	34%	43%
2 – Sep	0.7	0.6	0.8
	4.4%	7.2%	8.6%
3 – Nov	2.6 ^a	2.9 ^b	3.3 ^c
	49%	58%	71%

Hogget crutching – Farm 3



Hogget stain scores

- Clipped group similar to unmulesed on Farm 1, all groups similar Farm 2, Clipped intermediate on Farm 3

Farm	Average Hogget Stain Score (1-5)		
	% with moderate stain (≥ 3)		
	Mulesed	Clipped	Not mulesed
1 – Oct	1.3 ^a	1.7 ^b	1.6 ^b
	5%	19%	21%
2 – Sep	1.2 ^a	1.2 ^a	1.3 ^a
	2.4%	2.4%	3.7%
3 – Nov	3.0 ^a	3.1 ^b	3.4 ^c
	39%	55%	74%

Crutching weaners (Mar-Apr 2009)

Compared to mulesed ewe weaners:

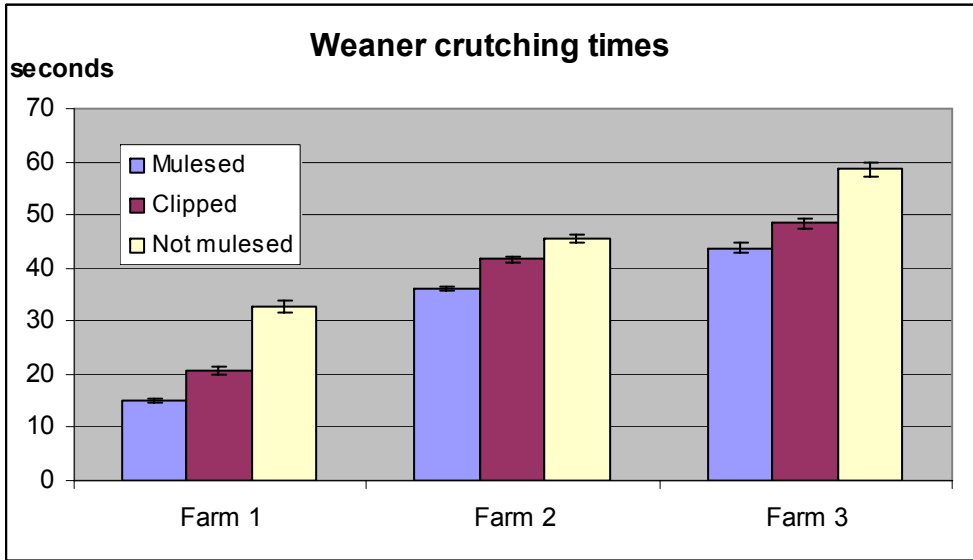
a) Clipped ewe weaners

- took 5-7 seconds (10-40%) longer to crutch
- had up to 64 g (60%) extra dags

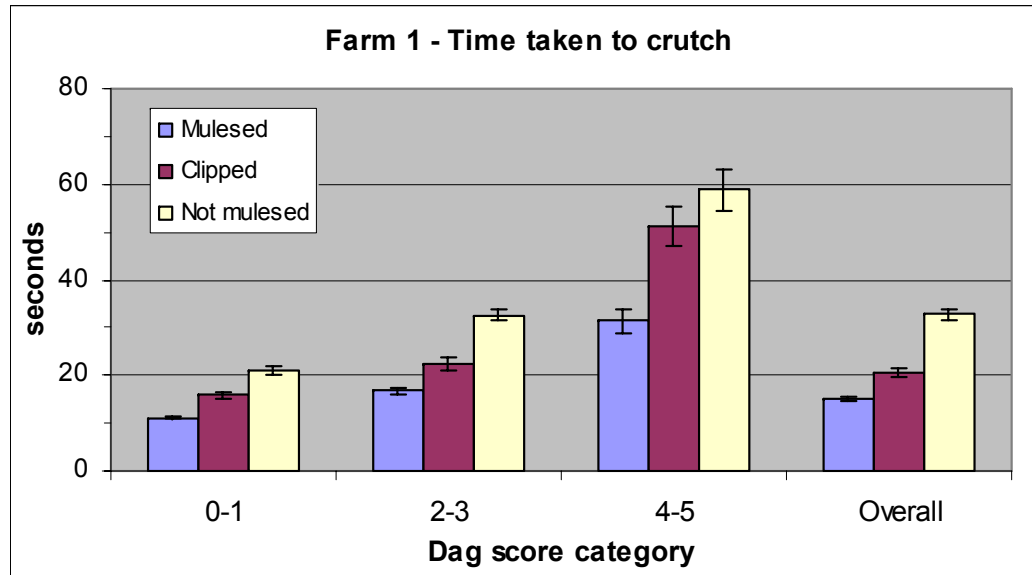
b) Unmulesed ewe weaners:

- 12-18 seconds (35-120%) longer to crutch
- 80-170 g (40-140%) extra dags





Crutching weaners (Mar-Apr 2009)



Dags increased crutching times

Crutching Hoggets

Slightly bigger differences; compared with mulesed group:

- Clipped ewe hoggets
 - took 13-21 seconds (40-80%) longer to crutch
 - had 180g (120%) extra dags
- Unmulesed ewe hoggets
 - 23-52 seconds (90-145%) longer to crutch
 - 270 g (180%) extra dags
- Will assess maiden ewes in Dec 2010 (& 2011?)

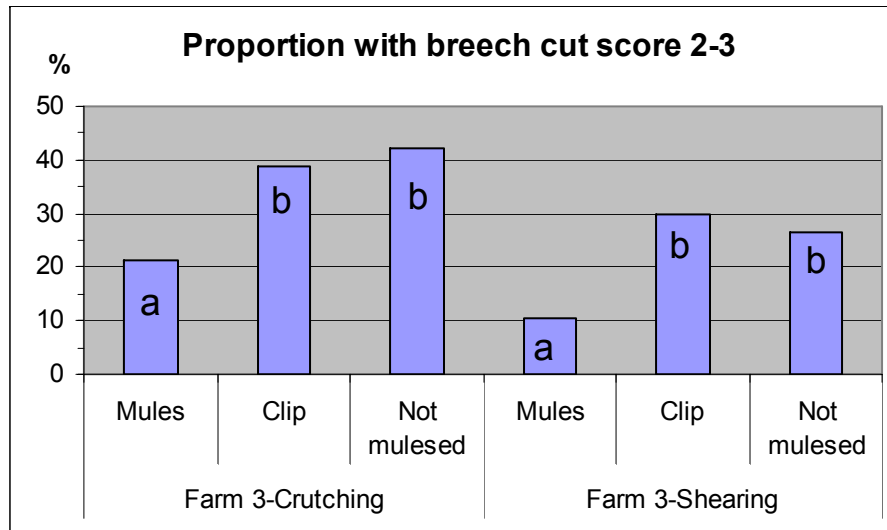
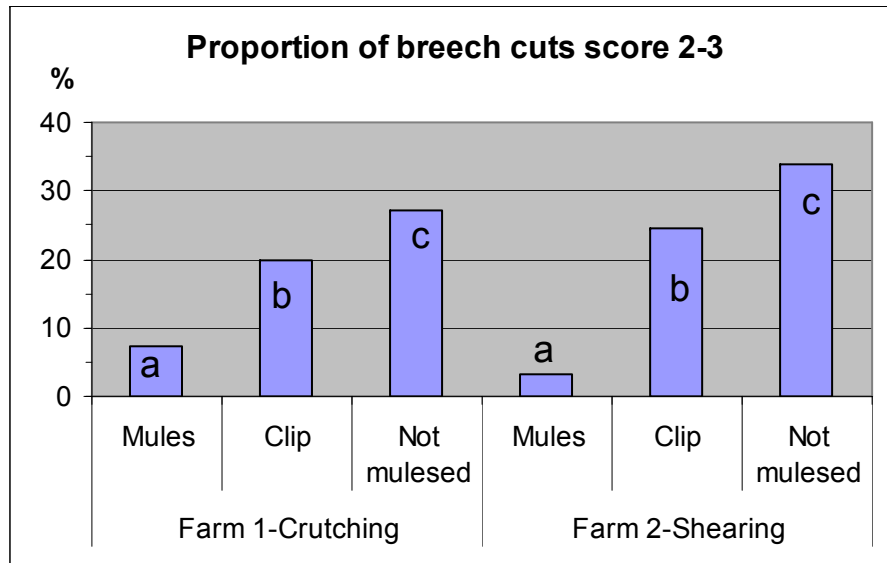
Breech cuts – hogget crutching/ shearing

Scored on a 0-3 scale:

- 0 = no cuts
- 1 = minor cuts
- 2 = multiple (>3) minor cuts or 'moderate' cuts
- 3 = severe cuts

Significantly more score 2-3 cuts in:

- unmulesed vs. clipped (2 of 3 farms)
- clipped vs. mulesed



Summary of interim results

- 1) Early season treatment of unmulesed sheep with dicyclanil (Clik™) prevented most breech strikes:
 - was effective when applied over dags (Farm 3)
 - a reduced period of protection in sheep that develop dag or stain after application? (Farm1)
- 2) Clips:
 - Provide some management & welfare advantages
 - Need preventive treatments for breech strike in high risk areas
- 3) Cost comparisons still to be determined – will vary according to farm (esp. amount of dag & crutching needed)
- 4) Unmulesed sheep – need to reduce dags, improve ease of crutching:
 - Control scouring - Genetic selection, worms, bacterial enteritis
 - Modified management
 - Shearing gear

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