

Investigating the magnitude and timing of reproductive wastage in ewe lambs

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Improving the reproductive performance of ewes joined as lambs has a potential \$332 million per annum pay-off for the Australian sheep industry. Whilst most lamb mortalities occur during the perinatal period, *in utero* losses between scanning and birth may be an important contributor to reproductive wastage in young ewes (Atta *et al.* 2005, Ridler *et al.* 2015). However, the extent and timing of reproductive wastage for ewe lambs in Australia is not well defined. The aim of this study was to determine the magnitude and timing of reproductive wastage in maiden ewe lambs.

Maiden ewes aged 7-10 months from six flocks on five farms (approximately 200 ewes per flock) were monitored throughout pregnancy. Pregnancy status was determined using transabdominal ultrasonography at 76-88 (scan 1) and 116-119 (scan 2) days from initial exposure to rams. Number of lambs born were recorded throughout the lambing period, and survival of lambs was recorded at marking. Aborted tissues and dead lambs were collected, with necropsies performed to determine cause of death. Lamb wastage between scan 2 and lambing included *in utero* losses and dead lambs not located in the paddock (e.g. scavenged). Wastage (% foetuses or lambs lost in specified period) were compared using 2-tailed z-test.

Overall wastage (% lambs present at scan 1 not surviving to marking) ranged 23-59% (Table 1). *In utero* losses and perinatal losses represented 33-69% and 32-67% total wastage, respectively (Table 1).

Table 1: Magnitude and timing of foetal loss in maiden ewe lambs

	Farm 1 2018	Farm 1 2019	Farm 2	Farm 3	Farm 4	Farm 5
Number of ewes joined (n)	198	197	200	198	213	162
Scanning rate (%) ¹	98	110	106	122	75	90
Marking rate (%) ¹	61	45	82	88	55	59
<i>In utero</i> wastage: scan 1 - scan 2 (%) ²	6 ^a	22 ^a	1 ^a	1 ^a	0 ^a	4 ^a
<i>In utero</i> wastage: scan 2 - birth (%) ²	6 ^a	9 ^b	6 ^b	18 ^b	9 ^b	9 ^a
Perinatal wastage: birth - marking (%) ²	26 ^b	28 ^a	16 ^c	9 ^c	18 ^c	21 ^b
Overall wastage: scan 1 - marking (%)	38	59	23	28	27	34

¹ Number of foetuses scanned or lambs marked / number of ewes joined

² % foetuses (or lambs) lost from start to end of respective period. Lambs dead at birth (full term) are included in birth – marking wastage

^{abc} Wastage values (% foetuses) in columns with different superscripts are significantly different (two-tailed P<0.05)

Necropsies were performed on 167 lamb cadavers. Dystocia (32%), starvation-mismothering-exposure (29%) and stillbirth (15.5%) were the three most common causes of death. Cause of death was unable to be determined in 21% cases due to predation or autolysis.

Perinatal death was the most important source of reproductive wastage, consistent with previous observations for mature ewes (Dennis 1974). Causes of perinatal deaths were consistent with observations in mixed age ewes (Refshauge *et al.* 2016). Mid- and late gestation losses were evident in all flocks, consistent with overseas studies reporting *in utero* losses as an important contributor to wastage in young ewes (Atta *et al.* 2005, Ridler *et al.* 2015).

In utero losses during mid- and late gestational (foetal loss) can be important contributors to reproductive wastage for ewes bred at 7-9 months of age on Australian farms. The project is being continued in 2020 to better determine timing and extent of reproductive wastage in maiden ewes and assess contribution of infectious diseases. Findings will inform management recommendations to address reproductive wastage in maiden ewes.

References

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