

# Sheep reproduction RD&A alert

**This sheep reproduction RD&A alert is an initiative of the Sheep Reproduction Strategic Partnership (SRSP).**

The SRSP will be launching a quarterly webinar series to highlight the latest sheep reproduction research, development and adoption activities. Our first webinar will be held in August, the date, time and registration link will be available in the next few weeks.

The SRSP aims to help sheep producers to profitability and sustainably increase lamb production through increasing lamb survival and weaning rates and will coordinate a national approach to improving sheep reproductive performance.

#### Program coordinator

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## Scientific papers

### Relationships among intramammary health, udder and teat characteristics, and productivity of extensively managed ewes

Ryan M Knuth, Whitney C Stewart, Joshua B Taylor, Bledar Bisha, Carl J Yeoman, Megan L Van Emon and Thomas W Murphy ([tom.murphy@usda.gov](mailto:tom.murphy@usda.gov))

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#### Abstract

Mastitis is an economically important disease and its subclinical state is difficult to diagnose, which makes mitigation more challenging. The objectives of this study were to screen clinically healthy ewes in order to 1) identify cultivable microbial species in milk, 2) evaluate somatic cell count (SCC) thresholds associated with intramammary infection, and 3) estimate relationships between udder and teat morphometric traits, SCC, and ewe productivity. Milk was collected from two flocks in early (<5 d) and peak (30 to 45 d) lactation to quantify SCC (n = 530) and numerate cultivable microbial species by culture-based isolation followed by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS; n = 243) identification. Within flock and lactation stage, 11% to 74% (mean = 36%) of samples were culture positive. More than 50 unique identifications were classified by MALDI-TOF MS analysis, and *Bacillus licheniformis* (18% to 27%), *Micrococcus flavus* (25%), *Bacillus amyloliquefaciens* (7% to 18%), and *Staphylococcus epidermidis* (26%) were among the most common within flock and across lactation stage. Optimum SCC thresholds to identify culture-positive samples ranged from  $175 \times 10^3$  to  $1,675 \times 10^3$  cells/mL. Ewe productivity was assessed as total 120-d adjusted litter weight (LW120) and analyzed within flock with breed, parity, year, and the linear covariate of log<sub>10</sub> SCC (LSCC) at early or peak lactation. Although dependent on lactation stage and year, each 1-unit increase in LSCC (e.g., an increase in SCC from  $100 \times 10^3$  to  $1,000 \times 10^3$  cells/mL) was predicted to decrease LW120 between 9.5 and 16.1 kg when significant. Udder and teat traits

included udder circumference, teat length, teat placement, and degree of separation of the udder halves. Correlations between traits were generally low to moderate within and across lactation stage and most were not consistently predictive of ewe LSCC. Overall, the frequencies of bacteria-positive milk samples indicated that subclinical mastitis (SCM) is common in these flocks and can impact ewe productivity. Therefore, future research is warranted to investigate pathways and timing of microbial invasion, genomic regions associated with susceptibility, and husbandry to mitigate the impact of SCM in extensively managed ewes.

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## Maternal caffeine administration to ewes does not affect perinatal lamb survival

Susan Robertson, Scott Edwards, Gregory Doran and Michael Friend

Animal Reproduction Science, 29 June 2021, *In Press*

DOI <https://doi.org/10.1016/j.anireprosci.2021.106799>

### Highlights

- Difficult birth was a key cause of lamb mortality
- Caffeine to lambing ewes did not increase lamb survival or weight at marking age
- Caffeine did not reduce the proportion of lambs dying from dystocia

### Abstract

Perinatal mortality of lambs is the major source of reproductive loss in extensive sheep production systems. Treatment with caffeine has reduced intra-partum mortality and/or improved metabolic indicators in other species following hypoxia. This study was conducted to evaluate the efficacy of caffeine for improving perinatal lamb survival. Experiment 1 comprised group-fed Merino ewes grazing pasture and offered 1.8 g/day (estimated 20 mg/kg live weight) caffeine throughout a 4-week lambing period, and a control without caffeine. The survival of lambs to marking (vaccinated, tail docked, males castrated) age in the caffeine treatment group (0.81) did not differ ( $P = 0.199$ ) from that of control lambs (0.73; total born  $n = 877$ ). Experiment 2 comprised Merino ewes lambing from three successive weekly joining groups. Treated ewes were drenched with an aqueous caffeine solution at a dose rate of 10 mg/kg live weight from the day before anticipated lambing, until the individual lambed. Control ewes were drenched with water. The proportion of lambs born dead (0.07) and the survival of lambs to marking age (caffeine 0.61; control 0.62) were similar between treatment groups (total born  $n = 1158$ ). In both experiments, ewe mortality and the weight of lambs at marking were not altered by caffeine treatments. The results from this large-scale field study indicate caffeine is not an effective therapeutic agent to increase either intra-partum or perinatal survival, or lamb growth rates.

## Upcoming events

<b>Date</b>	<b>Event</b>	<b>Location</b>
7 July 2021	<a href="#">Hunger (Sheep nutrition)</a> Leading Sheep Qld	Webinar
12 July 2021	<a href="#">Livestock Forum</a> Sheep Connect SA	Naracoorte, SA
14 July 2021	<a href="#">Livestock Forum</a> Sheep Connect SA	Jamestown, SA
14 July 2021	<a href="#">Foot issues in sheep</a> Meat & Livestock Australia	Webinar
15 July 2021	<a href="#">Livestock Forum</a> Sheep Connect SA	Kimba, SA
30 July 2021	<a href="#">Graham Centre Livestock Forum</a> Charles Sturt University	Wagga Wagga, NSW
12 August 2021	<a href="#">Sheep Easy 2021</a> The Sheep's Back WA	Williams. WA