FEBRUARY 2023

Sheep reproduction RD&A alert

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

The Towards 90 project is hosting field days on three focus farms during March and early April. The T90 Focus Forms are collaborating with the project and opening their doors for sheep producers to see first hand how the T90 best-practices are implemented across the reproductive cycle and at farm scale. Paradoo Prime (Pigeon Ponds, VIC), CJ South and Co (Wagin WA) and Kerin Agriculture (Yeoval, NSW) are hosting the field days on the 10 March, 30 March and 5 April respectively. Registration is essential for each event. See the upcoming events list on the last page of this issue for the registration links.

Program coordinator
Dr Sue Hatcher
M: 0407 006 454
E: sue@makinoutcomes.com.au

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.

Feature project update – more sheep reproduction PDS projects

Managing growth of ewe weaners

Aim

To demonstrate that differential nutritional management of ewe weaners in a self-replacing flock improves retention rate of replacement ewes leading to increased net reproductive rate of the ewe flock.

Progress

Seven demonstration site producers, managing a total of 307,452 hectares and 87,500 sheep, in the Booligal area of South Western NSW, have been selected to demonstrate the benefits of increasing weaner nutrition and weight gain during puberty on their subsequent lifetime net reproductive rate (NRR) as ewes. The project is tracking the performance of both the heaviest and lightest ewe weaners, recording key measurements at scanning, lamb marking and weaning.

For more information on the managing growth of ewe weaners PDS project contact Rob Inglis (rob.inglis@elders.com.au).

Improved pastoral feedbase management

Aim

To demonstrate that the weaning percentage of sheep enterprises can be improved by testing feed quality of the pastoral feedbase, identifying periods of nutritional deficit and developing and implementing profitable strategic supplementation options.

Progress

Three demonstration sites have been established and are using satellite data to measure biomass and undertaking feed quality testing. This information will be used with photo standards to improve the weaning

percentage of sheep enterprises and to reduce ewe mortality by understanding seasonal feed quality, identifying, and predicting periods of nutritional surplus and deficit and developing and implementing profitable seasonal options.
For more information on the improved pastoral feedbase management PDS project contact Mark Gardner (mark.gardner@vbs.net.au).

Increasing production using containment areas

Aim

To demonstrate the use of containment areas to maintain annual stocking rates and increase the sheep production system via increased reproduction rates, maintaining condition scores through mid and late pregnancy and maintaining ground cover until the 'break of the season'.

Progress

Another late break in most areas of South Australia showed again the value of locking ewes up over the summer and autumn period. The 3 major sites in the Barossa region of South Australia monitored this year showed well above average ground cover and feed on offer for a June lambing. Results are yet to be collated after lamb marking but ewe health into lambing and reduced mortality appears to be attributed to more balanced ration's (less grain based) fed in containment.
For more information on the increased production using containment areas PDS project contact Deb Scammell (deb@talkinglivestock.com.au).

Further details on these and other Producer Demonstration Site (PDS) projects can be accessed via the PDS search tool.

Review paper

Molecular insights to the sperm–cervix interaction and the consequences for cryopreserved sperm

Sophie Warr (Swar3383@uni.sydney.edu.au), Taylor Pini, Simon P de Graaf, Jessica P Rickard

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Abstract

Cryopreserved ram spermatozoa are limited in their capacity to traverse the ovine cervix and achieve fertilization. This altered interaction may be related to modified molecular communication between frozen-thawed ram spermatozoa, seminal plasma, and the female tract. As such, this review aims to identify the biological processes which underpin sperm maturation and transport throughout the female reproductive tract to elucidate factors which may alter this natural process in cryopreserved ram spermatozoa. We also assess critical barriers to ram spermatozoa specific to the ovine cervix and the role of seminal plasma in mitigating these barriers. Transcriptomics is explored as a new approach to understand the sperm–cervix interaction. Recent studies have demonstrated that both spermatozoa and seminal plasma contain a complex profile of coding and non-coding RNAs. These molecular species have clear links with functional fertility, and mounting evidence suggests they may be altered by cryopreservation. Emerging in vitro cell culture models are also investigated as a "next step" in studying this interaction, utilizing transcriptomics to identify subtle changes in female tract gene expression in response to spermatozoa. The application of such models is proposed as an exciting opportunity to investigate the unique challenges faced by cryopreserved spermatozoa traversing the ovine cervix prior to fertilization.

Scientific papers

A cross-sectional study of commercial ewe management practices for different sheep breeds across Southern Australia

Amy L. Bates (abates@csu.edu.au), Shawn R. McGrath, Maxwell B. Allworth, Susan M. Robertson and Gordon Refshauge

Animals, Volume 13(3), February 2023 **OPEN ACCESS**

DOI https://doi.org/10.3390/ani13030388

Simple summary

Best practice guidelines are available for the management of Maternal and Merino ewes across southern Australia; however, these are lacking for Composite and shedding breeds. Through a telephone interview, the management practices of a unique group of southern Australian sheep producers, and the motivations behind these practices, were explored. A large proportion of respondents reported mating and lambing practices that aligned with best practice guidelines; however, a smaller cohort did not see value in meeting the nutritional and mating length recommendations. Additionally, most producers are also seeking new information frequently and have implemented management changes within the last five years. Further work is required to understand the perceived barriers to best practice adoption, and for management guidelines to be developed for all sheep breeds to ensure sheep enterprises are operating in the most productive and profitable manner.

Abstract

The management of ewes across southern Australia may vary with breed and can change over time and, as such, a greater understanding of producer management practices and the motivations that influence these practices is required. A cross-sectional study was performed by telephone interview with sheep producers managing Composite, Maternal, Merino or shedding ewe breeds mated in either spring, summer, or autumn. The surveyed producers were a unique subset of southern Australian producers. A large proportion of the surveyed producers followed current best practice guidelines for ewe mating and lambing nutritional management; however, some producers did not align with these targets. Further, some producers did not see the value in attaining the current recommendations. Pregnancy scanning was widely practiced, likely an artefact of the recruitment process; however, a few producers did not utilize this information for nutritional management at lambing time. Finally, most producers were active in their search for new information, seeking information regularly from a wide range of sources and reported making management changes within the last five years. Further work is required to understand why some producers are not adopting best practice where possible and to understand current barriers for adoption. Management guidelines for all sheep breeds are required to best manage sheep across southern Australia.

Potential role of biologgers to automate detection of lame ewes and lambs

K.E. Lewis (kate.lewis@nottingham.ac.uk), E. Price, D.P. Croft, L.E. Green, L. Ozella, C. Cattuto and J. Langford

Applied Animal Behaviour Science, Volume 259, February 2023

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Abstract

Lameness is an important health, welfare and economic problem in sheep flocks and early treatment is key to controlling lameness. Biologging technology provides high-resolution, continuous data that offers a novel opportunity to detect lameness either directly or by identifying behavioural changes; either option would

facilitate more rapid treatment of lame sheep than visual observation. Here, the role of biologging data to identify lame sheep through behavioural changes within and between sheep is investigated. Accelerometers and proximity sensors were fitted to a flock of 50 Poll Dorset ewes rearing 32 single and 36 twin lambs, in Devon, UK in October 2019. Accelerometers were used to identify standing time and classify behaviour into four states for ewes (inactive, ruminating, grazing, walking) and three for lambs (inactive, sucking, moving). Principal components analysis reduced these behaviours to two components, 'feeding' and 'inactive' for ewes, and 'inactive' and 'feeding' for lambs. A visual locomotion score of each sheep was used each day to assess lameness. Complete records from sensors and locomotion observations were obtained for 513 days of ewe-activity and 720 days of lamb-activity (40 ewes, 26 single-raised and 28 twin-raised lambs). Linear mixed effects models were used to assess the effect of lameness adjusted for covariates age, litter size, social behaviour, environment and climate on standing time and the principal components. Lame ewes stood less, spent less time grazing and were more inactive than non-lame ewes. Lame lambs also stood less and were more inactive than non-lame lambs. Lambs with severely lame dams were also more inactive than those with non-lame dams. In conclusion, it is possible to identify behavioural differences between lame and non-lame ewes and lambs which could help enable automated early warning of lameness and consequently early treatment of lameness, and improved sheep welfare.

Upcoming events

Date	Event	Location
1 March 2023	BestWool/BestLamb & BetterBeef Networks Regional Roadshow Ag Victoria, AWI & MLA	Sale, NSW
2 March 2023	BestWool/BestLamb & BetterBeef Networks Regional Roadshow Ag Victoria, AWI & MLA	Buninyong, Vic
3 March 2023	BestWool/BestLamb & BetterBeef Networks Regional Roadshow Ag Victoria, AWI & MLA	Dunkeld, Vic
8 March 2023	MeatUp Forum Meat & Livestock Australia	Wudinna. SA
10 March 2023	T90 Victorian Field Day Towards 90	Pigeon Ponds, Vic
10 March 2023	Magnificent Maidens Field Day neXtgen Agri & MLA	Hensley Park, Vic
21 March 2023	RAMping Up Repro Sheep Connect NSW	Boorowa, NSW
29 March 2023	Macquarie MLP Final Field Day AMSEA, AWI & NSW DPI	Trangie, NSW
30 March 2023	T90 Western Australian Field Day Towards 90	Wagin, WA
31 March 2023	Flirting with flock fertility Leading Sheep	Longreach, Qld
3 April 2023	RamSelect and Merino Flock Profiling Workshop Moses & Son	Wagga Wagga, NSW
4 April 2023	RamSelect and Merino Flock Profiling Workshop Moses & Son	Grenfell, NSW

5 April 2023	RamSelect and Merino Flock Profiling Workshop Moses & Son	Condobolin, NSW
5 April 2023	T90 New South Wales Field Day Towards 90	Yeoval, NSW