

What's Hot and What's Not 2022 Sheep, Camelid and Goat Veterinarians Conference



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Welcome



The SCGV Executive is proud to welcome you this week to the 2022 Sheep, Camelid and Goat Veterinarians Conference in Adelaide, South Australia!

We believe this is the first time that the special interest group has decided to go with an annual conference, and we have put together a list of quality speakers covering a range of topics. There has been no shortage of speakers wanting to be a part of the program and as a result we have big picture topics such as reproductive management of flocks, a focus on pain relief management, case reports on trace element toxicities and deficiencies, post bushfire management, insecticide resistance and is castration required for terminal lamb production. There is something of interest for all small ruminant and camelid veterinarians.

This week there's plenty of time for socialising and networking with your colleagues which we know is one of the main reasons you attend these conferences.

We look forward to reconnecting with you this week and welcoming you to Adelaide for another great SCGV Conference.

Regards,

Andrew Whale, SCGV President

About the Sheep, Camelid and Goat Veterinarians



The Sheep, Camelid and Goat Veterinarians (SCGV) is a special interest group of the Australian Veterinary Association (AVA) that brings together veterinarians with an interest in small ruminant health, welfare and production. The science underpinning small ruminant health and welfare is growing as more research is undertaken in Australia, and across the world, supporting the sheep, camelid and goat industries.

The Sheep, Camelid and Goat Veterinarians was established to improve human and animal welfare by increasing the understanding of animal behaviour and its significance in veterinary science.

Contact us

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About the Venue

The 2022 Sheep, Camelid and Goat Veterinarians Conference is taking place at the Stamford Grand Adelaide. Located on absolute beachfront at Glenelg in Adelaide, this hotel reflects the style of grand hotels of the Victorian era. Only 20 minutes from the city and 10 minutes from the airport. A true end destination convention hotel, Stamford Grand Adelaide is focused on running events in an environment conducive to concentration. The hotel also has the largest ballroom within the Stamford Group featuring spectacular panoramic views of Glenelg Beach.

The exhibition will be in Ballrooms 1 & 2. The exhibition will be the networking hub of the conference, giving delegates the opportunity for direct contact with sponsors and exhibitors alike. All refreshments breaks are held in the exhibition. Scientific sessions will be held in Ballrooms 3, 4 & 5



Level One

- Function Lobby: Registration
- Ballrooms 1 & 2: Exhibition Area
- Ballrooms 3, 4 & 5: Plenary Room

Wireless Internet

While onsite all delegates have access to free Wi-Fi. Please follow the below steps to connect:

1. Connect to Stamford wireless
2. Open browser
3. Select first time user
4. Select conference code
5. Enter password SCGV2022
6. Wi-Fi will now be connected

Social Program

Welcome Event

Wednesday 22 June | 5:30pm - 7:00pm
Exhibition Area

Please join us for a relaxing evening of collegiality and catching up with new and old friends. Also make the most of this opportunity to meet and mingle with companies from across Australia, keeping up to date with the latest products and services.

Event Dinner

Thursday 23 June | 7:00pm - 10:00pm
The Function, at the Beachouse

Come and relax after a hard day of science, catch up with friends, meet some new peers over a 3-course dinner. Includes two complimentary drinks.

This event is included in all full registrations.



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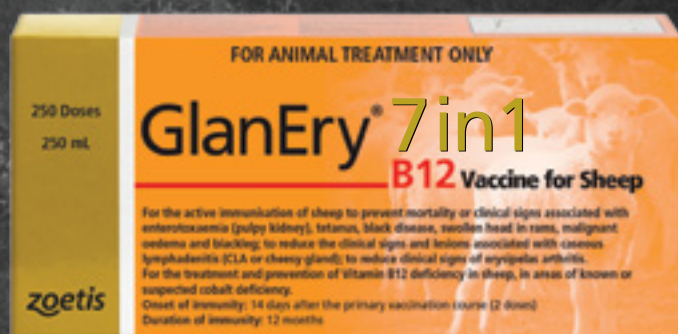
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Speaker Profiles



Bruce Allworth

Bruce Allworth graduated from Sydney, and worked at Massey University and with the Mackinnon Project. In addition to operating his own sheep and cattle consultancy business, and sheep and cattle enterprise, Bruce has completed a Masters and PhD, is a Fellow of the College, a registered sheep specialist and Diplomat of the European College, and has been the National Coordinator for the OJD Program, the Inaugural Chair of the Sheep Sustainability Framework, an AVA Auditor of AWI's Flystrike program, and a past President of the Sheep Vets. Bruce is currently the lead for the Veterinary Production Animal Group at CSU at Wagga and former Director of the Fred Morley Centre.



Mary Carr

Dr Mary Carr was appointed Chief Veterinary Officer in December 2018.

Dr Mary Carr has been a Veterinary Officer with PIRSA Biosecurity SA-Animal Health since 2008.

Mary completed a Masters in Veterinary Public Health Management through Sydney University in 2012 and became a member by examination of the Epidemiology Chapter of the Australian and New Zealand College of Veterinary Scientists in 2015.

Mary provides a strategic leadership role in the Biosecurity - Animal Health department. The mission of the Animal Health program is to protect and facilitate market access, livestock productivity, public health and consumer confidence through the health, welfare, quality, safety and image of South Australian livestock and livestock products.

Mary has knowledge and experience in animal health disease surveillance systems; emergency response preparedness; on-farm biosecurity practices and livestock identification and traceability. Mary has worked with both the extensive (sheep, cattle and goats) and intensive (poultry, pigs and dairy) production systems.

Mary is particularly interested in using epidemiologically sound scientific practices to underpin surveillance programs, policy development, risk management and facilitate trade. Other areas of interest include data capture and epidemiological analysis especially using geospatial techniques.



Tom Clune

Tom Clune graduated from Murdoch University in 2015 and has worked in mixed practice in regional Western Australia and Perth. In 2018 Tom commenced a PhD looking into the timing, magnitude and causes of foetal and lamb loss in maiden ewes across southern Australia. He is a member of the ANZCVS, Sheep Medicine chapter and is involved in teaching animal science and veterinary students in animal handling, reproduction and pathology. Tom runs a small flock of composite ewes on the outskirts of Perth and has continued to work in mixed and emergency practice whilst completing his PhD.



Tatjana Dobrijevic

Tatjana (Tanya) is a graduate of the University of Adelaide where she recently completed her Bachelor of Science (Honours) in animal science. Her love of livestock, developed through life on her family's hobby farm and various cattle and sheep showing experiences, prompted her to investigate red gut in lambs as the topic of her honours project. Following on from her studies, she wanted to pursue a career within the livestock industry and is currently working as a livestock project officer with the Victorian Farmers Federation.



Elsa Glanville

Elsa is a livestock veterinarian particularly interested in sheep reproduction, farm systems and livestock disease. She is a member of the Australian and New Zealand College of Veterinary Science, Sheep Medicine. The work presented here was conducted whilst employed with the Mackinnon Project, though she now works with the Animal Biosecurity team in the NSW Department of Primary Industries and is based on a sheep farm in the NSW Central Tablelands.



Tim Gole

Tim graduated from the University of Queensland in 2006. He completed his memberships in Sheep Medicine 2019 (to spite the drought) and achieved a graduate certificate in Agribusiness in 2021

Tim's second proudest achievement was being the co-founder of The Western Rivers Veterinary Group Central West NSW and the North Australian Veterinary Group in NW QLD. His proudest achievement however was to create a viable sheep consultancy and production services called For Flocks Sake Pty Ltd. Its purpose is to help producers grow their best sheep and make every ewe a winner.



Kelly Graham

Kelly is the Associate Director of Livestock Veterinary Operations for Zoetis Australia. After graduating from Sydney University in 1994 with a Bachelor of Veterinary Science, Kelly spent the first 12 years of her career as a mixed animal veterinary practitioner in south west and central NSW. After leaving private practice, Kelly worked in clinical research and development roles for 10 years at multiple pharmaceutical companies prior to joining the commercial team at Zoetis in 2017.



Mark Hutchinson

Professor Hutchinson is the Director of the ARC Centre of Excellence for Nanoscale BioPhotonics (CNBP), an Australian Research Council Future Fellow and a Professor within the Adelaide Medical School at the University of Adelaide. Mark is also President of Science and Technology Australia, the peak body in Australia that represents 90,000 scientists.

Professor Hutchinson's research explores the "other brain" or the other 90% of cells in the brain and spinal cord. These immune-like cells are termed glia. Mark's research has implicated the brain immune-like cells in the action of drugs of dependence and the negative side effects of pain treatments. He has pioneered research which has led to the discovery of novel drug activity at innate immune receptors. His work has enabled the translation of compounds at the lab bench to clinical agents used at the bedside.

In his role as Director of the CNBP he is responsible for the research program of the ARC Centre of Excellence with \$50M of funding headquartered at The University of Adelaide, with nodes at Macquarie University and UNSW, Sydney, the RMIT, Melbourne and Griffith University Qld. The CNBP is partnered with universities and companies in Europe, the US and China, as well as other Australian institutions. Prof Hutchinson's work with the CNBP is to "Discover new approaches to measure nano-scale dynamic phenomena in living systems" and allow the first minimally invasive real-time visualisations of the "other brain".



Bruce Jackson

Bruce is a veterinarian with 46 years' experience in animal health, having spent 15 years in large animal practice and 31 in Government Veterinary Officer positions. Bruce retired from Biosecurity Tasmania in 2017 and now runs a sole trader veterinary consultancy, mostly doing work that is too specialised or time-consuming for veterinary practitioners, such as complex disease outbreak investigations, trial work, workshops, research projects and facilitating situations involving negotiations with regulators.



Caroline Jacobson

Caroline Jacobson has worked in mixed practice in Australia and the UK, and for the last 20 years worked in sheep production research. She lectures nutrition, livestock health and production to veterinary and animal science students, and recently led projects for Meat and Livestock Australia investigating abortion and lamb mortality for maiden ewes, the role of dystocia as contributor to lamb mortality, and post-weaning management to improve weaner survival and lifetime ewe reproductive performance. In her spare time she is a long suffering supporter of the Fremantle Dockers, and will let you decide if that's a sign of good resilience or poor clinical reasoning.



Bea Kirk

Dr Bea Kirk graduated from Murdoch University in 2006 and worked in mixed practices in both New Zealand and Victoria, before starting at the Mackinnon Project in 2011. She has an MVSc on gastrointestinal nematodes in prime lamb flocks in western Victoria; facilitated a MLA Producer Demonstration Site trial on the use of electronic ID in commercial flocks, and has been involved with numerous other projects related to the sheep industry. Bea obtained her Memberships in Sheep Medicine in 2021 and is involved with teaching DVM students. She lives on a sheep and cropping farm in western Victoria and is passionate about applying research in practical ways applicable to commercial farm enterprises on a day-to-day basis to improve animal health and welfare as well as profitability.



Deb Lehmann

Deb graduated from Murdoch University in 1981. With husband Greg Johnsson they established the Veterinary Clinic on KI. Their passion has been to assist farmers improve livestock health and production and farm business profitability. Deb became involved with footrot eradication in 2004 with a University of Sydney custom vaccine pilot trial. She assisted with more extensive trials on both Kangaroo Island and King Island until 2012. Deb has continued to eradicate footrot from many farms each year following disease control with vaccination combined with foot-bathing. Deb's insight into the way sheep heal following control of severe footrot led to her palliative treatment and salvage of sheep with burnt feet on Kangaroo Island in January 2020.



Danila Marini

Danila graduated from The University of Adelaide in 2013 with a B. Animal Science and first class honours and completed a PhD on self-medication in livestock at the University of New England in 2017. Their research interests focus on animal behaviour and welfare as well as relieving pain and stress in livestock. Danila currently works at CSIRO as an Experimental Scientist with the animal behaviour and welfare field with a primary focus in sheep welfare, as well as working as an Animal Research Ethics officer.



Sean McGrath

After growing up in Millicent, SA, Sean graduated Veterinary Science from Charles Sturt University in 2010. He then worked in Terang, Victoria and had a brief stint in Esperance, Western Australia. In 2014 he and his wife returned to Millicent and took on the family business, that being the Millicent Veterinary Clinic and in 2021 they purchased the neighbouring Kingston Veterinary Clinic. Sean works primarily with production animals, predominantly beef cattle and sheep, with a growing focus on advisory work, both in groups and with individual clients.



Mary McQuillan

Dr Mary McQuillan graduated from the University of Adelaide in 2016 with a Doctor of Veterinary Medicine Degree. Mary is a production animal veterinarian and was the principal investigator on the 2019-2021 “Unlocking the keys to ewe survival” Meat and Livestock Australia (MLA) funded project. Mary is also a research associate with Charles Sturt University (CSU) and is currently undertaking a Doctor of Veterinary Studies at CSU with expected completion at the end of this year.



Caitlin Pfeiffer

Dr Caitlin Pfeiffer is a Lecturer in Veterinary Epidemiology (One Health) at the University of Melbourne. She is a veterinarian and former livestock consultant at the Mackinnon Project. Her PhD completed in 2018 investigated passive and syndromic surveillance in Australia’s sheep industry. Her current research focuses on spatial epidemiology, the effects of bushfire on livestock and wildlife, and teaching and training for epidemiological capacity building in Australia, New Zealand and South-East Asia. In her teaching at Melbourne, Caitlin co-coordinates a multi-disciplinary One Health subject for undergraduate students and teaches epidemiology and research skills in the Doctor of Veterinary Medicine.



John Plant

- Graduated from Sydney University in January 1962 and spent the next 6 years in the field with the Gundagai Pastures Protection Board.
- Joined NSW Agriculture in May 1968 as a Veterinary Research Officer specialising in sheep reproduction and perinatal mortalities. From 1992 until 2000, was the Program Leader (Flock Health), NSW Agriculture located at Elizabeth Macarthur Agricultural Institute.
- In 1988, registered as a Veterinary Specialist in Ovine Medicine.
- In 2007, awarded the Medal of the Order of Australia (OAM) in 2007 for services to veterinary science and the sheep industry
- Author or co-author of numerous papers published in Australian and overseas journals and in Conference and Workshop Proceedings.
- Recognised nationally and internationally as a specialist in the sheep health and production area. Presently a part-time veterinary consultant.
- Life Member of Australian Sheep Veterinarians and Honorary Member of the UK Sheep Veterinary Society.



Luzia Rast

Luzia has a practical background as field veterinarian in mixed private practice and government veterinarian in Australia. She was a member of the Farm Animal & Veterinary Public Health group of the University of Sydney to coordinate two research projects in Laos and Cambodia for improving productivity and profitability of large ruminants. Luzia completed a PhD on the clinical and financial impact of internal parasites in cattle and buffalo in Laos. Since May 2013, she is a member of the production animal group at Charles Sturt University in Wagga Wagga as a ruminant lecturer and researcher. Her interests include veterinary public health, farm level knowledge, practices and attitudes on livestock health and disease surveillance.



Narelle Sales

Narelle commenced field and laboratory research on ecto- and endo parasites of livestock in the early 1980's focusing on the sheep blowfly *Lucilia cuprina*, sheep body louse *Bovicola ovis*, and insecticide resistance following employment by the then NSW Agriculture. Over a decade and a half ago Narelle had the opportunity to diversify into immunology, protein science, molecular biology, and bacterial diseases. She subsequently has been involved in research projects as diverse as BRD in feedlots, arthritis in lambs, Erysipelas in pigs, and immunoassay and on farm molecular based diagnostics development while continuing the study of flystrike and lice insecticide resistance.



Shaun Slattery

Shaun is a Local Land Services District Veterinarian based at Narrabri since 1991, currently covering the Narrabri and Walgett Shires in north-west NSW. This industry funded government role has a strong focus on livestock disease surveillance as well as regulatory functions. In the 1990s Shaun worked on cotton pesticide beef residue campaigns and at the same time turned an interest in internal parasites into ANZCVS Sheep Medicine membership. Shaun has had a strong involvement with Emergency Animal Disease responses including the 2001 UK Foot and Mouth Disease campaign, the 2007-08 Equine Influenza response and in 2018 the NZ *M.bovis* response.



Robert Suter

Robert's forty-year veterinary career, graduating from Murdoch University in 1981, has ranged from private practice through university to government to being a veterinary consultant with Apiam Animal Health, but always with a bent for sheep. Along the way, he has been active in AVA matters, being the President that saw the ASV become the SCGV, whilst dealing with the live export ban. He is a Member of ANZCVS in Medicine of Sheep and has a Masters degree in Epidemiology. That interest in patterns of disease in populations across landscapes over decades leads to this paper.



Colin Trengove

Colin is a lecturer in ruminant health and production at the School of Animal and Veterinary Sciences, Roseworthy campus, University of Adelaide. Following graduation from Murdoch University in 1979, Colin returned to South Australia to pursue a career interest in ruminant nutrition and health. This spans employment in Primary Industries, mixed veterinary practice, livestock consultancy and academia as well as completing his MVS at the University of Melbourne.

His research interests have focussed on the influence of mineral nutrition on productivity and health including his PhD on the aetiology and epidemiology of rib fractures in lambs.



Bruce Watt

After two years in practice in Victoria and two years at Kansas State University I spent four memorable years with Dr Fred Morley and Prof Doug Blood. While our endeavours became the Mackinnon Project, I decided to try my hand at farming.

My wife Kate and I moved to Condobolin in 1983 to set up a mixed practice and commence cropping and running merino sheep and cattle. I became involved in a range of rural organisations. In 2004 I received the NSW Regional Achiever of the Year Award.

In 2006, we left for Bathurst where I commenced as District Veterinarian. I was awarded the University of Sydney Faculty of Veterinary Science Alumni Award for Community Achievement in 2015. Last year I was tickled pink to be named the inaugural Small Ruminant Veterinarian of the Year and this year received the NSW CVO's award.

In about 2010 I completed my Bachelor of Arts in History and Politics, then dabbled in a master's degree in urban design. I have recently been elected to Oberon Council. We run Angus cattle on our home property. I have four adult daughters and now 2.5 grandchildren.



Andrew Whale

Andrew Whale studied at CSU in Wagga and has been working as a sheep veterinarian at Livestock Logic in Hamilton, Victoria for 10 years. His role is predominantly consultancy-based working with sheep farmers looking to improve their livestock farming businesses. He is passionate about livestock farming and the livestock veterinary industry.



Scott Williams

Scott holds a Masters in Agricultural Animal Medicine and Production from the University of Melbourne. His 30-year+ career has included veterinary practice, farm consultancy, the pharmaceutical industry and agricultural RD&E management. His company Forest Hill Consulting provides services in animal health and welfare, as well as facilitation, strategic planning, governance and evaluation. Scott is Chair of the Sheep Sustainability Framework, Deputy Chair of the Victorian Animal Welfare Advisory Committee, member of the Melbourne Veterinary School Advisory Board, part-time EO of Veterinary Schools of Australia and New Zealand and director of Central Highlands Water.



Peter Windsor

Peter Windsor is Professor Emeritus and formerly Professor of Livestock Health and Production at The University of Sydney (USYD), so pseudo-retired to manage the consultancy 'Production Animal Welfare and Health Services'. Peter graduated as a veterinarian in 1977 (USYD), completed pathology residencies as a Fulbright scholar at Cornell University NY and San Diego Zoo CA in 1980-2, a PhD in ruminant neuropathology in 1988, then a thesis of selected published works for a DVSc in 2007 (USYD). He has specialist veterinary registration in Pathobiology, is a Diplomate of the European College of Small Ruminant Health Management, and continues leading and collaborating in many projects funded by international livestock industry agencies and businesses, contributing >250 peer-reviewed journal and book chapter publications, with >6741 citations, especially in South East Asia where considerable efforts have been made to control & eradicate FMD; see @ <https://mekonglivestock.wordpress.com>. This work aims to improve global food and fibre security, deliver one health approaches to emerging infectious diseases, advance animal welfare and promote ecosystem sustainability in livestock production systems.

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Session Program

Time	Wednesday 22 June Ballrooms 3, 4 & 5
8:00am - 8:15am	Conference Welcome <i>Andrew Whale, SCGV President</i>
8:15am - 8:30am	Presentation of Zoetis Ovine Scholarships 2021 and 2022 
8:30am - 9:00am	Comparison between ram and wether lamb production: do we need to castrate lambs destined for slaughter? <i>Bruce Allworth</i>
9:00am - 9:30am	Certification programmes available to Australian woolgrowers <i>Bea Kirk</i>
9:30am - 10:00am	Epidemic Catarrh: what was it and why did it disappear? <i>John Plant</i>
10:00am - 10:15am	SCGV sheep toolkit launch <i>Presented by SCGV Committee Members</i>
10:15am - 10:45am	Morning Tea - Exhibition Area, Ballrooms 1 & 2
10:45am - 11:15am	Pneumonia in southern Australian lamb feedlots <i>Mary McQuillan</i>
11:15am - 11:45am	Investigating kidney lesions in lambs at Gundagai Meat Processors (GMP) <i>Luzia Rast</i>
11:45am - 12:15pm	General surveillance for endemic and emergency animal diseases <i>Bruce Jackson</i>
12:15pm - 12:35pm	The strategic direction of animal health and wellbeing policies <i>Mary Carr, Chief Veterinary Officer, South Australia</i>
12:35pm - 12:45pm	Using disease investigation subsidies: a South Australian private practitioner perspective <i>Sean McGrath</i>
12:50pm - 2:00pm	Lunch - Exhibition Area, Ballrooms 1 & 2
2:00pm - 2:30pm	Health, welfare and biosecurity of sheep and cattle exposed to Australian bushfires <i>Caitlin Pfeiffer</i>
2:30pm - 3:00pm	Appropriate analgesia saves sheep with burnt feet on Kangaroo Island <i>Deb Lehmann</i>
3:00pm - 3:30pm	Bushfire assistance: how can you best help your clients in the immediate aftermath <i>Sean McGrath</i>
3:30pm - 4:00pm	Afternoon Tea - Exhibition Area, Ballrooms 1 & 2
4:00pm - 4:30pm	AVA Audit of AWI's Flystrike Prevention Research, Development and Extension program <i>Bruce Allworth</i>
4:30pm - 5:00pm	Sheep blowfly insecticide resistance: perpetual motion <i>Narelle Sales</i>
5:00pm - 5:30pm	What drench advice should I provide my clients? Anthelmintic resistance update: results of 50 FECRTs conducted across Australia from July 2018 - March 2021 <i>Kelly Graham</i>
5:30pm - 7:00pm	Welcome Event - Exhibition Area, Ballrooms 1 & 2

Session Program

Time	Thursday 23 June Ballrooms 3, 4 & 5
7:30am - 8:45am	<p>Boehringer Ingelheim Animal Health Breakfast Session Doing business with sheep producers: does it pay? <i>Enjoy breakfast while our panel discuss how improving vet engagement with sheep farmers can be delivered as a sustainable business model.</i></p> <p style="text-align: right;"><small>AWA Silver supporter</small> </p>
9:15am - 9:45am	<p>Acute selenium toxicity in lambs: two overdose scenarios <i>Elsa Glanville</i></p>
9:45am - 10:15am	<p>Clinical manifestations of selenium deficiency in sheep (and goats) <i>Bruce Watt</i></p>
10:15am - 10:45am	Morning Tea - Exhibition Area, Ballrooms 1 & 2
10:45am - 11:15am	<p>Is regenerative agriculture critical to the survival of domestic herbivores? <i>Colin Trengove</i></p>
11:15am - 11:45am	<p>Impact of ewe nutrition on healthy bones and disease prevention <i>Colin Trengove</i></p>
11:45am - 12:15pm	<p>Investigating the cause and prevention of red gut in lambs grazing lucerne <i>Tatjana Dobrijevic</i></p>
12:15pm - 1:30pm	Lunch - Exhibition Area, Ballrooms 1 & 2
1:30pm - 2:00pm	<p>Welfare impacts of plant intoxications on extensively-raised livestock in southern Australia <i>Peter Windsor</i></p>
2:00pm - 2:30pm	<p>Plant poisonings of sheep in summer rainfall non-temperate eastern Australia <i>Shaun Slattery</i></p>
2:30pm - 3:00pm	<p>Arboviruses, flaviviruses and the foetus <i>Robert Suter</i></p>
3:00pm - 3:30pm	Afternoon Tea - Exhibition Area, Ballrooms 1 & 2
3:30pm - 4:00pm	<p>What's hot in sheep industry sustainability reporting <i>Scott Williams</i></p>
4:00pm - 4:30pm	<p>Measurement enabled pain solutions for livestock <i>Mark Hutchinson</i></p>
4:30pm - 5:00pm	<p>Update on pain assessment and relief in sheep <i>Danila Marini</i></p>
7:00pm - 10:00pm	Event Dinner - The Function, at the Beachouse

Session Program

Time	Friday 24 June Ballrooms 3, 4 & 5
8:00am - 8:55am	SCGV Annual Meeting 2022
8:55am - 9:15am	Reproductive performance for maiden and multiparous ewes on Australian farms <i>Caroline Jacobson</i>
9:15am - 9:35am	Pre-joining ram exams: a few tricks and an update of MLP ram mating success project <i>Tim Gole</i>
9:35am - 9:50am	Optimising reproduction success through pre joining ewe assessments <i>Andrew Whale</i>
9:50am -10:10am	Post-mortem findings from periparturient non-Merino ewes across southern Australia <i>Elsa Glanville</i>
10:10am - 10:45am	Morning Tea - Exhibition Area, Ballrooms 1 & 2
10:45am - 11:05am	Insights into campylobacteriosis in maiden ewe flocks <i>Tom Clune</i>
11:05am - 11:25am	<i>Toxoplasma gondii</i> exposure and associated risk factors in Victorian ewes <i>Elsa Glanville</i>
11:25am - 11:40am	Evidence-based approach to investigating poor reproductive performance in maiden ewes <i>Caroline Jacobson</i>
11:40am - 12:00pm	Case study: ewe lamb foetal loss in south east South Australia <i>Sean McGrath</i>
12:00pm - 12:45pm	Improving commercial sheep reproduction outcomes <i>Panel Discussion and Forum</i>
12:45pm - 1:45pm	Lunch - Exhibition Area, Ballrooms 1 & 2

Session Abstracts

Please note abstracts are displayed in the order they are presented, as per the program on pages 17 - 19.

Using disease investigation subsidies: a South Australian private practitioner perspective

S McGrath

Millicent Veterinary Clinic, Millicent, SA

This paper will outline how Disease Surveillance Subsidies are utilised in private practice in the South Australian context.

This paper comes from the perspective of a private veterinary practitioner in South Australia. The presence of disease surveillance subsidies and way they are administrated in the state are of considerable benefit to private veterinarians, their clients and the industry as a whole.

This paper will describe from a practitioner perspective how the South Australian system works, how it is used on a day to day basis and the real benefits and problems of the system. The benefits are seen through enhancing client relationships, better results in disease investigation and aiding in building of business by being able to get good outcomes for clients and then give good advice.

Private veterinarians should have a good appreciation of how disease surveillance subsidies work in their jurisdictions, how to get the most out of them and to how work with government agencies that deliver them.

Certification programmes available to Australian woolgrowers

B Kirk and J Webb Ware

Mackinnon Project, FAVS, University of Melbourne, VIC

There are now several certification programmes available to Australian woolgrowers, which may enable them to receive a premium for at least part of their wool clip. This paper outlines some of these programmes and looks at the potential financial outcomes of certification for woolgrowers.

Using a model wool clip from a typical wool-producing enterprise, a sensitivity analysis was conducted to examine the profit received by the grower. The variables examined were the proportion of the clip attracting a premium, and the percentage premium (above the price for non-certified wool) received. The cost of certification for each programme, and the cost of the producer's time to complete the certification process were included in calculations.

It was assumed that the farm already complied with the programme requirements.

Certification programmes can generate positive returns at current premiums, particularly if a larger proportion of the clip attracts a premium, or the cost of certification is low or zero. Lower cost programmes generally carried less risk of producing a loss, but maximum profits were also lower. Overall, the likely profit was variable depending on the proportion of the clip attracting a premium, the percentage premium offered and the fee structure of the certification programme.

Certification programmes may be highly profitable for wool growers. However, growers should investigate whether the wool they have produced in the past is likely to attract a premium, and the proportion likely to do so. Furthermore, the possibility of forward contracts should be investigated. A role exists for veterinary consultants in assisting clients with conducting these analyses as well as helping clients achieve the animal welfare requirements of such programmes.

Epidemic Catarrh: what was it and why did it disappear?

J W Plant

Sydney, NSW

This paper will review previous reports on epidemic catarrh, a disease that was the scourge of the sheep industry in New South Wales with losses of up to 70% being reported in some flocks in the 1830s. In the late 1860s the disease apparently “disappeared”.

The paper will review the early reports of the disease in the 1800s, looking at the spread, and reports on the clinical and pathological findings. It will look at suggested causes and provide evidence to refute recent claims that the disease was associated with black disease.

The clinical and pathological findings indicate that the disease was likely to be pneumonic pasteurellosis, caused by *Mannheimia haemolytica*. The stresses associated with the practice of folding sheep at high densities in yards, to protect them from attacks by Indigenous people and dingoes. This management predisposed animals to infection, that was then aggravated by the often unhygienic condition of the yards or folds.

The disease largely disappeared in the late 1860s when the dingoes were brought under control and the threat from itinerants had largely disappeared. This removed the need to yard sheep overnight and thus removed the main factor predisposing sheep to infection. However, given the right conditions with shedded or housed sheep in situations with poor ventilation, epidemic catarrh (or pneumonic pasteurellosis) can still occur.

General surveillance for endemic and emergency animal diseases

B Jackson and R Barwell

Animal Health Australia, Canberra, ACT

General Surveillance is a form of surveillance similar to “citizen science”, utilising informal networks of interested people to gather information on the presence, distribution and prevalence of pests, weeds and diseases, and has been adapted to monitor diseases and conditions affecting sheep, camelids, goats and other livestock in Tasmania.

A network of veterinary practitioners, shearers, knackery operators, sheep contractors, livestock agents, livestock transporters and rural merchandisers gather information on diseases and conditions they observe as they go about their daily business and report back monthly to an experienced veterinarian who gives support via text, phone or email. Data is collated and reported back to the network, rural extension services and media. Interested parties can also subscribe and receive an emailed report. The reports promote good biosecurity practices and existing surveillance programs.

Veterinary practitioners or state departmental veterinarians follow up on reports that could be new or Emergency Animal Diseases (EADs).

The program recorded over 500 different diseases and conditions in livestock in Tasmania in 2020/21.

Species	Sheep	Cattle	Goats	Pigs	Camelids	Deer	Poultry
Number of conditions reported	268	127	45	24	18	1	13

Table 1. Number of conditions reported by species in 2020/2021

Valuable information on prevalent conditions, best engagement/extension opportunities and EAD exclusions was generated by this project.

General surveillance, while not as accurate as professionally designed and delivered active surveillance, is relatively inexpensive, covers a greater proportion of the livestock population, increases the chances of early detection and reporting of EADs, builds relationships that are valuable if an EAD is detected, and may provide evidence that Australia is free of certain exotic pests and diseases, thus assisting in maintaining our premium market access.

Pneumonia in southern Australian lamb feedlots

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Historically in Australia, pneumonia appeared to be of low significance in causing mortality and production losses in Australian sheep ¹. However, abattoir surveys suggest that the condition is more prolific ^{2,3} than once thought. In other countries, pneumonia has been reported to be a major cause of mortality in lot fed lambs as well as a cause of reduced growth and feed efficiency. ^{8,69}

This presentation details the findings specific to pneumonia from a prospective cohort study currently being undertaken on lamb feedlots in New South Wales and South Australia.

Acknowledgements

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Investigating kidney lesions in lambs at Gundagai Meat Processors (GMP)

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The National Sheep Health Monitoring Project (NSHMP) commenced in 2007 to monitor lines of sheep in abattoirs for animal health conditions, including nephritis, that reduce farm profit through productivity losses or increased meat processing wastage. In recent years, Animal Health Australia (AHA) and Gundagai Meat Processors (GMP) have identified the condemnation of lamb kidneys due to pathology as a significant issue.

This research project is due to commence in March 2022 and seeks to better understand the epidemiology including aetiology, prevalence, and associated risk factors of kidney lesions in lambs processed at GMP from 2018 to early 2022.

A multi-stage approach will be used and includes:

1. A retrospective analysis of existing data collected under the NSHMP at GMP from 2018 to early 2022 to estimate the prevalence and associated risk factors (e.g. local government area, age, sex). This data analysis is to be completed in April/May 2022.
2. A prospective study of kidney lesions of lambs slaughtered at GMP to determine the pathology and potential aetiologies of the lesions in April/May 2022.
3. An online survey of a cohort of Property identification Code (PIC)s with different levels of prevalence to further investigate potential risk factors of kidney lesions using case study farms in June/ July 2022.

By the conference dates results from the retrospective data analysis will be available including prevalence of lesions, and risk factors. In addition, the prospective study should also be finalised or in its final stages and at least results on aetiology, prevalence and risk factors will be available.

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Comparison between ram and wether lamb production: do we need to castrate lambs destined for slaughter?

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² Department of Primary Industries, NSW

Sheep production in Australia includes routine castration of male lambs at a young age, unless the lambs are to be used for breeding. Due primarily to welfare concerns, it is becoming more common to leave male lambs uncastrated in many countries, and it is now illegal to castrate lambs in some countries on welfare grounds. Leaving ram lambs entire may have positive welfare and production benefits but may also require changes to management such as ensuring lambs reach slaughter age at a young age to avoid meat taint.

A study was conducted at Charles Sturt University (CSU) Farm, Wagga Wagga to assess the effects on management and production of leaving male Composite lambs uncastrated. In brief, Composite breed lambs were systematically allocated to one of two treatment groups at lamb marking, with every other male lamb allocated to the alternate group. Group 1 (n=133) were left uncastrated, and Group 2 (n=132) were castrated using the Numnuts® system; all other procedures at lamb marking (tail docking, ear tagging and vaccinations) were the same. Lambs were weighed immediately after marking, again at weaning and prior to slaughter (after curfew). Ewes and lambs grazed monocultures of dual-purpose wheat then lucerne prior to weaning, and lambs grazed lucerne-dominant pastures post-weaning without supplementation.

Male lambs (both castrated and uncastrated) were run as a single cohort through until lambs were sent to the abattoir for slaughter.

Ram lambs grew faster ($P < 0.001$) than wether lambs (315 ± 6.6 v. 277 ± 6.6 g/hd.day), resulting in heavier mean live weights of ram lambs at weaning. There was no difference ($P = 0.678$) in post-weaning growth rates (190 ± 5.7 v. 187 ± 4.6 g/lamb.day) and the final live weight for rams was greater than for wethers (Table 1).

	Rams	Wethers	P value
Marking weight	14.4 ± 0.36 (n=133)	14.4 ± 0.37 (n=132)	0.923
Weaning weight	31.1 ± 0.56 (n=122)	29.1 ± 0.56 (n=120)	0.014
Pre-slaughter weight	44.6 ± 0.62 (n=122)	42.5 ± 0.610 (n=118)	0.018

Table 1. Comparison of growth rate between rams and wethers

Ram lamb carcasses had a lower fat percentage, more lean muscle, and provided comparable yields to wether lambs. Eating quality characteristics are also being assessed.

This study demonstrated that ram lambs can be effectively managed for meat production on a commercial farm and achieve higher finished weights than wether lambs.

Health, welfare and biosecurity of sheep and cattle exposed to Australian bushfires

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In 2019/2020, Australia experienced severe bushfires, with tens of thousands of livestock killed or euthanised. At the time, there was little systematic research available describing the long-term effects of fire exposure on surviving animals. This project aimed to investigate the impacts of bushfire exposure on cattle and sheep health and welfare, and to suggest mitigation strategies. This presentation will summarise key findings most relevant for sheep veterinarians and their clients.

Over 60 farmers that were fire-affected during Black Summer contributed to the project, reporting their observations of animal health, welfare and biosecurity challenges. In addition, the fire preparation and response activities undertaken on the studied farms were analysed for association with avoiding livestock losses to identify potentially effective risk mitigation

strategies. National Sheep Health Monitoring Program records were analysed for association between bushfire exposure and pneumonia or pleurisy at slaughter.

Over 50% of participating farmers identified health problems post-fire, including plant toxicities, respiratory and eye problems, lameness and unexplained deaths. Health issues were largely associated with changes to farm management rather than direct fire injuries. Being prepared for fire by having a fire plan was associated with a lower odds of livestock deaths from fire. An increase in pneumonia in fire-exposed sheep at slaughter was detected, with greatest predicted effects within a 10km radius of bushfire and in the first 30 days since the fire occurred. Importantly, animal welfare post-fire can be supported through effective whole-farm recovery strategies that support farmer wellbeing.

A bushfire preparation and recovery manual for livestock producers, containing recommendations based on project results and expert recommendations, has been produced and will be available through Meat and Livestock Australia in 2022.

Appropriate analgesia saves sheep with burnt feet on Kangaroo Island

D Lehmann

Kangaroo Island Veterinary Clinic, Kangaroo Island, SA

Sheep that have burnt feet do not need to be destroyed as per current assessment guidelines. This case study of a flock of Merino sheep on Kangaroo Island (KI) shows how the use of appropriate analgesia, antibiotics and nursing prevented suffering and allowed healing of burnt feet and/ or sloughed hooves with a subsequent return of sheep to their mobs. The death of all adult and hogget worker rams meant that ewes were joined to the surviving ram lambs to become pregnant and produce lambs in the same season.

Bushfire assistance: how can you best help your clients in the immediate aftermath

S McGrath

Millicent Veterinary Clinic, Millicent, SA

This paper will outline how the private practitioner can assist their clients immediately after a bushfire and is based on recent firsthand learnings from the farmer's perspective.

This paper comes from the perspective of a private veterinary practitioner who recently had to manage the immediate fire response on their own family property, which experienced significant stock losses. It is a summary of learning from that first-hand experience of being in the farmer's position but viewed through the lens of the vet.

In the immediate aftermath of a fire a farmer has many things they need to do, coordinate and get right. Time is of the essence and in most cases the farmer does not know what, how, where or when to do things such as, stock assessment and destruction, stock burial, coordination of people and logistics.

The paper will outline how with our training we can provide the correct advice and leadership to assist our clients through such an event. Having some preparedness of private practitioners can allow them to be effective at taking control of a situation where the client is likely to have no experience.

AVA Audit of AWI's Flystrike Prevention Research, Development and Extension program

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²Agrivet Business Consulting, Hamilton, VIC

Australian Wool Innovation (AWI) has undertaken research projects over the past 18 years around breech flystrike. Initially the focus was on finding an alternative to mulesing, but more recently the focus of the research has broadened to flystrike prevention (including breech flystrike) and animal welfare more generally. The current 5-year program, known as the Flystrike Prevention Research, Development and Extension Program, has 5 Pillars - Breeding and Selection, Breech Modification Procedures, Non-Invasive Management Practices, Analgesia and Anaesthesia, and Education, Extension and Promotion. The AVA provides two auditors to independently review the program, either biannually or annually.

This paper will present the latest AVA review which occurred in April 2022, including where vaccine development work is at.

Sheep blowfly insecticide resistance: perpetual motion

N Sales

NSW DPI, Elizabeth Macarthur Agricultural Institute, Menangle, NSW

The Australian sheep blowfly, *Lucilia cuprina*, is an economically significant insect which has developed resistance to insecticides. Despite this, there is a long history of insecticide use and they remain an essential component of flystrike management today. Cyromazine (e.g. Vetrazin) resistance was confirmed in the field (Levot 2012) and shown to be present, in association with dicyclanil resistance (e.g. Clik), in 100% of submissions from NSW (Sales 2020). Information provided by submitters indicates this follows the widespread and exclusive use of these two insecticides. Dicyclanil based products were adopted widely due to their long protection periods and spray on formulations.

The latest insecticide registered for flystrike control is the neonicotinoid, imidacloprid. Despite only being released in 2019 this insecticide had previously been used for 10 years to control the sheep body louse, *Bovicola ovis*. As earlier studies have demonstrated the selective power of louse treatments on sheep blowfly populations (Sales et al 1989), the susceptibility of field strains to imidacloprid was determined. This data was analysed according to state of origin and their cyromazine and dicyclanil resistance. They were categorised as dicyclanil/cyromazine (Di/Cyr) susceptible, Cyr resistant, low-level Di/Cyr resistant and high-level Di/Cyr resistant.

The broadest range of response to imidacloprid was observed in strains from NSW which was statistically different to WA, SA, and Vic strains ($p < 0.001$). In addition, WA was different to Vic, while SA was not different to either WA or Vic. Analysis also showed that the high-level Di/Cyr resistant strains (from all states) displayed a higher mean imidacloprid “resistance factor” which was statistically different from the other dicyclanil and cyromazine resistance categories.

Determining the toxicological response of field strains to a range of insecticides can provide valuable information on insecticide interactions, the risks of “cross resistance” and appropriate resistance management options.

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What drench advice should I provide my clients? Anthelmintic resistance update: results of 50 FECRTs conducted across Australia from July 2018 - March 2021

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¹ Dawbutts Pty Ltd, Camden, NSW

² Zoetis Australia Pty Ltd, Sydney, NSW

In 2015 the MLA estimated that internal parasites cost the Australian sheep industry \$435.9M annually. This figure highlights the significant production losses associated with worms.

Drench selection decisions are hugely important as drench resistance is common throughout Australia. Ineffective drenching due to using a product with efficacy less than 95% will result in reduced average daily gains, reduced wool growth, scouring, anaemia and even death, with the compounding issue of contaminating pasture with the resistant worms that have survived the drench. Pasture contamination with resistant worms due to ineffective drenching results in more rapid reinfestation and increased resistance pressure.

Between July 2018 and March 2021, Zoetis in conjunction with Dawbutts Pty Ltd conducted a study to evaluate the field efficacy and resistance status of drenches for the control of a range of gastrointestinal nematode parasites in naturally infected sheep. The study was conducted on 50 commercial farms, located in Australia, excluding the Northern Territory. Efficacy was measured by faecal egg count reduction (FECR) 14 days after treatment. Startect[®] plus four or five commercially available single active reference products were included in the study.

The key findings of the study are listed below:

- Drench resistance was prevalent in all major sheep producing regions of Australia
- 94% of the farms in this study showed evidence of resistance
 - 70% of farms however showed evidence of resistance to 3 or more actives,
- Every farm in NSW (22/22), SA (6/6) & WA (6/6) had evidence of resistance
- 12 out of 14 farms in Victoria had evidence of resistance, and 1 out of 2 farms in Tasmania had evidence of resistance
- All drench actives used in the study showed evidence of resistance:
 - 70% of farms showed evidence of resistance to abamectin
 - 84% of farms showed evidence of resistance to BZs (white drenches)
 - 60% of farms showed evidence of resistance to levamisole (clear drenches)
 - 38% of farms showed evidence of resistance to moxidectin

- Resistance was seen across all the major production limiting nematodes: Barber's Pole worm (*Haemonchus*), Black Scour worm (*Trichostrongylus*) and Brown Stomach Worm (*Teladorsagia*)

Take home advice for Veterinarians to provide their clients:

- Resistance to single active drenches is common however why are single active drenches still commonly used on farm?
- All producers need to be conducting either a DrenchCheck or DrenchTest (FECRT) to understand the nematode resistance status on their farm
- A proper quarantine drench (containing 4 actives with at least one component being a new active such as derquantel or monepantel) should always be an essential component of all induction drenches if producers are to successfully minimise the chance of bringing resistant worms onto their farms.
- Combination drenches must be considered best practice by all producers based on the prevalence of resistance to single actives.
- Drench resistance is highly prevalent in Australia and internal parasites are costing Australian producers. Vets should be recommending that their client perform regularly worm egg counts and have an understanding of the drench resistance status on their property (by doing a DrenchCheck or a DrenchTest (FECRT)) otherwise production losses associated with worms should be expected.

Acute selenium toxicity in lambs: two overdose scenarios

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¹Mackinnon Project, Faculty of Veterinary and Agricultural Sciences, University of Melbourne

²Central Tablelands Local Land Services, Bathurst, NSW Department of Primary Industries

Selenium deficiency results in clinical disease and/or subclinical production loss. It is therefore included in many livestock products including anthelmintics, mineral and vitamin drenches or injections, vaccines, lick blocks and water supplements. However, selenium is not benign, and overdose can result in both acute and chronic toxicosis. Acute toxicity in lambs results in lethargy, respiratory distress, neurological disturbance and death resulting from cardiac failure, mostly within 72 hours of exposure and is reported with doses around 2.2-2.6 mg/kg (oral) and 1 mg/kg (injected). Several overdose scenarios are possible, including overdosing one product or administering multiple products containing selenium simultaneously.

Two cases of selenium intoxication are presented from the Central Tablelands of NSW that illustrate these scenarios. Case one involved 10% mortality over two days in first cross Merino lambs after three selenium containing products; an anthelmintic drench, a clostridial vaccine and an injectable mineral supplement (off-label), were administered at lamb marking.

Case two involved 2% mortality over four days in recently weaned Merino lambs supplemented with excess liquid mineral in troughs. Progressive respiratory distress and sudden death occurred in both cases, with neurological signs observed in case two. Clinically affected lambs were lethargic, in varying degrees of respiratory distress with thick foam around the mouth and had a tottery (cute) gait. At necropsy heavy, wet lungs with stable white foam in the trachea were a consistent feature. The skeletal and cardiac muscle in lambs from case two were pale and flabby. Fresh liver samples confirmed selenium overdose, with levels consistently exceeding the normal range (1.3-19 $\mu\text{mol}/\text{kg}$ wet wt.; case 1 range 67.3-203; case 2 range: 102-164). There is no specific antidote for selenium intoxication. In case two, the owner was advised to minimize stress by providing shade and avoid moving. Access to the liquid mineral supplemented water ceased (troughs were dumped and flushed), and no further supplementation was advised for the exposed mob. These cases serve as a reminder of the potential toxicity risk associated with selenium supplementation and the ease with which overdose can occur.

Clinical manifestations of selenium deficiency in sheep (and goats)

B Watt

Central Tablelands Local Land Services, Bathurst, NSW

Much of the Central Tablelands of NSW is selenium deficient causing ill-thrift, nutritional muscular dystrophy (NMD or white muscle disease) and potentially, embryonic mortality. NMD is uncommon but was seen in lambs, calves and kids in the spring of 2020.

The two cases of NMD in lambs occurred in November 2020. In the first, 12 of 280 merino lambs mustered for marking were clinically affected and another 6 were found dead. In the second case, 12/120 Composite lambs, also mustered for marking, were clinically affected and another 3 were found dead. Affected lambs were reluctant to walk and when moved walked with short steps and an arched back.

In the first case, 5 affected lambs had glutathione peroxidase (GSHPx) levels ranged from 5-9 $\mu\text{mol}/\text{L}$ while in the ewes GSHPx levels ranged from 4-11 U/gHb. Creatinine kinase levels ranged from 10, 311 to 25,301 units. In the second case GSHPx levels ranged from 10-36 in the lambs and 26-103 in the ewes. CK levels ranged from 3492 to 4053 U/L in the affected lambs.

In mid-December 2020 between 10-30 deaths in Boer kids were attributed to WMD. Necropsy revealed chronic myocardial and skeletal muscle necrosis and mineralisation and peri-acinar liver necrosis consistent with congestive heart disease. This case was not confirmed by testing the selenium status of the does or kids.

Selenium responsive ill-thrift is seen on the Central Tablelands and a case in which clinically normal lambs showed an improved liveweight, wool growth and reduced worm egg count has been reported. Embryonic mortality has not been proven. NMD, common on the Central Tablelands in the mid-1970s is now uncommon despite widespread selenium deficiency.

Is regenerative agriculture critical to the survival of domestic herbivores?

C L Trengove

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This paper will discuss how grazing management affects mineral and vitamin nutrition of plants and domestic herbivores. The focus will be on how the grazier can sustainably maintain soil, plant, and animal health through both organic and supplementary means. Domestic herbivores are vital to the livelihoods of more than 10% of the global population through the conversion of low-quality plant material into valuable meat, milk, fibre, and labor.

Careful attention to their nutritional management underpins their environmental, social, and economic value. The nutrient consumed while grazing is dependent on access to sufficient feed as determined by the grazier, the animal's physiological state, and the variety plus physical and chemical characteristics of plants available. Herbivores need to consume sufficient dry matter to meet physiological demands as well as a balance of essential nutrients and negligible toxins. Supplements are used to meet these needs when grazing options are limited either due to suboptimal grazing management or seasonal and climatic conditions. Most experienced graziers recognize the quantitative nutritional needs of livestock, but few know the specific nutritive needs or how best to provide them. It is all too common to see domestic herbivore health suffer due to human failure to appreciate and provide their nutritive needs over a few weeks to several months. The merits of various grazing management strategies will be discussed as well as the consequences for nutrient availability and how the grazier can be trained to proactively recognize and address these needs before livestock health and productivity are compromised. This will include key nutrient guidelines for optimal health maintenance in soil, plants, and herbivores.

Impact of ewe nutrition on healthy bones and disease prevention

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This paper will discuss how grazing management and supplementation affects bone health and consequent disease susceptibility in ewes and lambs. Diseases associated with suboptimal bone health include uterine inertia, dystocia, osteoporosis, osteomalacia, bone fractures, hypocalcaemia, hypomagnesaemia, and pregnancy toxaemia as a sequela. Dystocia alone is estimated to cost the Australian sheep industry \$780 million annually or \$23 per ewe joined based on a lamb sale price of \$6.50/kg carcass weight. This cost includes an estimated 35% of all ewe deaths and 54% of all lamb deaths attributed to dystocia. While the cause of dystocia is multifactorial failure to recognize and address mineral deficiency in the diet of late pregnant ewes is a major contributing factor.

The flow-on effect on reduced lamb growth rate and bone fractures is conservatively estimated to cost the sheep industry a further \$20 million annually. Calcium is vital to bone, muscle and neural development and function in all mammalian species. Approximately 70% of lamb calcium and phosphorus requirements are derived from maternal bone resorption and 30% from the diet during early lactation. It is facilitated by an estimated 20% of accreted maternal bone calcium being mobilised during pregnancy to compliment dietary intake in meeting the needs of the developing foetus. The consequences of failure to mobilise or absorb sufficient calcium during mid to late pregnancy include hypocalcaemia, osteoporosis, osteomalacia and uterine inertia in the ewe as well as poor growth rates and weak bones in lambs.

The epidemiology of these sequelae and strategies to prevent them will be discussed in detail in the paper.

Investigating the cause and prevention of red gut in lambs grazing lucerne

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Red gut is an enteric disease of sheep that occurs when grazing high protein low fibre pastures such as lucerne. This study aimed to determine the prevalence of red gut in lambs grazing lucerne and to investigate the effect of a calcium-based foliar spray on prevalence. Twenty-seven lucerne seed producers in the upper southeast of South Australia were surveyed and asked to report lamb deaths during grazing of lucerne paddocks during July/August 2021. In addition, four farms were chosen to compare the effect of a calcium-based foliar on plant mineral content and lamb death rates in adjacent treated and control paddocks. All data was entered into Excel and imported for analysis in SPSS, using frequencies and a series of multiple linear regression analyses using the MIXED procedure. A total of 17 deaths were investigated: 71% (n=12) due to enterotoxaemia, 24% (n=4) red gut and 6% (n=1) acidosis. Below average death risk was reported by 52% and no deaths by 42% of participating producers during the winter period. No differences were evident in plant nutrients between the treated and untreated paddocks in the foliar trial. Small sample size and low mortality rate hindered the study. While red gut has long been recognised as a major cause of lamb death on lucerne in this region, it was less prevalent in this study than previously reported. This was likely due to a range of factors including previous misdiagnoses, seasonal differences, and modified management practices. Producers appear to have effectively reduced the occurrence of red gut through improved feed supplementation and grazing management strategies. Further investigation of the use of foliar sprays to prevent red gut is also desirable.

Welfare impacts of plant intoxications on extensively-raised livestock in southern Australia

P A Windsor

Production Animal Welfare & Health Services, Scarborough, NSW

In Australia, it has been estimated that ~95% of people consider farm animal welfare as a concern, with 91% seeking regulations ensuring transparent practices occur in livestock production. Achieving requires optimal nutritional and disease prevention management, humane husbandry, handling and transport and shelter for reducing impacts of climatic extremes, particularly hyperthermia and hypothermia episodes and severe bushfires and floods. Despite improved drought planning, recent welfare disasters occurred during and following droughts, with prevailing dry El Niño replaced by La Niña conditions and precipitous rainfall causing mass flooding and immediate and delayed disease and toxin-induced losses that exceed the losses from the dry period. In 2022, unprecedented rainfall in March led to mass drownings of livestock and welfare issues of excessive floodwater exposure. Drought management requires producers to consider whether dried toxic plants were introduced in hay, straw and silage and further, whether herbicide resistant seed including weeds, was introduced in drought feed. This requires manual checking of feeds and use of feed-out areas restricted to 'sacrificial paddocks' located where more regular animal surveillance can occur. Disease syndromes commonly recorded in this period include disorders of: Sudden death (green drought pregnancy toxemia, Nitrate & HCN poisoning, *Cestrum* sp., *Phalaris*); Neurological: Pyrrolizidine alkaloids, *Phalaris*, Ryegrass: perennial & annual); Gastrointestinal and hepatic: Pyrrolizidine alkaloids; Renal: *Panic* sp.; & Dermatological (primary & secondary photosensitisation, eventual burr injury and Orf risk) disorders, with St John's Wort and Blue Heliotrope of considerable concern in 2022. Proactive management of the increasing risks from intoxications from pasture and weed species are required as producers seek to adapt in a changing climate to the demanding animal welfare standards expected by a society increasingly divorced from rural community activities.

Plant poisonings of sheep in summer rainfall non-temperate eastern Australia

S Slattery

North West Local Land Services, Department of Regional NSW, Narrabri, NSW

This paper outlines the field presentation and management of common plant poisonings of sheep in the summer rainfall non-temperate parts of eastern Australia.

Plant poisonings of sheep are a major animal health and management problem in the cropping and pastoral summer rainfall parts of eastern Australia. The author draws on his 30 years' experience as a District Veterinarian in north-west NSW and the observations of colleagues, to describe the current field presentation, range of clinical signs, key diagnostic tools and practical management of plant poisonings in this part of Australia.

Arboviruses, flaviviruses and the foetus

R Suter

Apiam Animal Health, Piper Lane, East Bendigo, VIC

An overview of the arboviruses affecting sheep, camelids & goats, discussing the pertinent epidemiology that leads to episodic outbreaks of arboviral disease in vertebrates.

Episodic outbreaks of arboviral disease are seen in domesticated species and humans in south-eastern Australia with the flaviviruses often implicated. Each time it appears to be a different virus causing disease in a different species, but there is a pattern. Arboviral disease occurs when three factors coincide:

1. presence of a viraemic host,
2. competent vectors, and
3. a naïve population.

In south-eastern Australia, the climate seasonal oscillation between El Nino and La Nina provides for this confluence: La Nina seasons promote the build-up of insect vectors allowing the extension of their range southwards from tropical northern Australia into naïve populations in the south, and the subsequent drying phase of the climate cycle leads to a loss of herd immunity and population turnover in these domestic herds and flocks.

The Flaviviradae are a vast collection of viruses, many of whom are important zoonoses. They have a tropism for neural tissue and the reproductive tract, so should be considered by practitioners amongst their differential diagnoses in the years with wet summers when these signs are seen in pregnant or young animals. The recent outflow of Japanese encephalitis virus into pigs and humans is a case in point.

The Bunyaviradae include viruses of real threat to small ruminant production in SE Australia: Akabane and Bluetongue viruses are present, and diagnosis of the latter in sheep or goats will have a severe international trade impact for Australia. Bluetongue virus will cause high morbidity and mortality across all age groups of small ruminants, and the outbreak of Schmallenberg virus in Bavaria in 2014 serves as an example of the disease manifestations of arthrogryposis and pregnancy loss that these viruses may cause.

What's hot in sheep industry sustainability reporting

S Williams and S Hyland

Sheep Sustainability Framework Steering Group

Sheep Sustainability, Meat and Livestock Australia, North Sydney, NSW

The purpose of this paper is to discuss the technologies and modes used to establish benchmark data and track ongoing progress against key material issues identified in the Sheep Sustainability Framework (SSF). These approaches demonstrate the transdisciplinary nature of sustainability and the Australian sheep industry's commitment to transparency and continuous strengthening of the Framework.

Three collaborative projects, some utilising technologies not yet applied to the sheep industry as a whole, have been undertaken to bring data to key SSF metrics.

1. The Australian cattle, sheep meat and wool industries have collaborated to conduct a triennial animal husbandry survey amongst national livestock producers. Animal wellbeing and welfare is recognised as the most highly material issue across the livestock sector. Both the Australian Beef Sustainability Framework (ABSF) and SSF track incidence of best practice including pain management and disease prevention.
2. Australian Wool Innovation (AWI) and Meat and Livestock Australia (MLA) have jointly commissioned the first Lifecycle Assessment (LCA) for the Australian flock. A working model of the Australian sheep industry has been developed to understand and report emissions and emissions intensity from sheep meat and wool, on an industry-wide scale.
3. The SSF has partnered with the ABSF to visualise and analyse 30 years of satellite imagery over Australian grazing land. The technology informs the fractional groundcover metric for the SSF, demonstrates the impact of management on long term trends in ground cover and tree cover and assesses trends in land condition to guide decisions on long-term sustainable carrying capacity.

Investment in obtaining sound, defensible data and meaningful industry collaborations illuminates common challenges, creates efficiencies, and helps the Australian sheep industry sustainably produce the world's best sheep meat and wool, now and into the future.

Measurement enabled pain solutions for livestock

M Hutchinson

Director of the Centre for Nanoscale BioPhotonics, Adelaide Medical School, University of Adelaide, SA

The origins of persistent pain in humans is comprised of a complex, twisted and multi factorial journey that culminates in a "cancer of the soul". Recent advances in the basic science underpinning our mechanistic understanding of persistent pain have embraced "the other brain" as an integrator of multiple life stimuli. This other brain, or the other 90% of the brain and spinal cord consists of the immune like cells of the central nervous system call glia. This complex integration of life experiences, which are translated into immune and neuronal signals cause the glial - neuroimmune cells of the central nervous system to adapt and change the environment in which the neuronal system operates. If these adaptations present in the regions of the brain and spinal cord responsible for "pain processing" - the somatosensory neuroanatomical locations - then this can present as hypernociception and eventual persistent pain. Our appreciation for this neuroimmune signalling and its contributions to the health and disease of the brain has its origins in the study of the illness response. It is now clear this fundamental neuroscience of pain has relevance for livestock as the same cellular hallmarks of exaggerated pain can now be seen resulting from husbandry practices. This development in the neuroscience of livestock provides new opportunities to adapt measurement technologies from human medicine to create world first objective pain measurement technologies for livestock, that allow understanding of livestock neuroscience, which in turn allows for the creation of precision intervention and mitigation solutions that will lead to productivity AND wellbeing improvements.

This presentation will summarise recent studies in this field and equip the attendees with further insights of the complexity and power that viewing the brain as a neuroimmune organ brings to understanding persistent pain with the view to deliver translational solutions for livestock producers.

Update on pain assessment and relief in sheep

D Marini

CSIRO, Armidale, NSW

As concern for livestock welfare increases the need for mitigating pain also increases. Our ability to assess pain in sheep and provision of pain relief is continually improving. Producers now have access to registered, easy to use products such as Tri-Solfen, Buccalgesic and NUMNUTS for ring and surgical procedures such as mulesing, castration and tail-docking. However, there is still a gap in the feasible acute and chronic pain relief provision. There are also potential toxicity aspects of lambs receiving multiple doses of anaesthetics when undergoing castration, tail docking and mulesing together, as well as limitations of products currently registered for use in sheep anaesthetics, for example, lignocaine. Recent studies have also highlighted our lack of understanding in the differences in sex and their display of pain related behaviours and response to analgesics. This presentation will cover the assessment and alleviation of pain in sheep in practical situations as well as update on recent research outcomes.

Reproductive performance for maiden and multiparous ewes on Australian farms

C Jacobson, D Hutchison, B E Clarke, S Hancock, E Bowen and A N Thompson

Centre for Animal Production and Health, Murdoch University, Murdoch, WA

Suboptimal reproductive performance of maiden ewes impacts sheep enterprise productivity, but the extent and causes of the poorer reproductive performance of maiden ewes on Australian sheep farms are not well understood. Here we show the reproductive performance of maiden ewes relative to their multiparous counterparts on the same farms across Australia using a cohort survey. Data were collated for 79 farms (413,702 ewes) across major sheep producing regions in Australia. There was a 58% difference in marking rate for non-Merino maiden ewe lambs compared to multiparous ewes, and this was attributable to 50% difference in reproductive rate and 16% difference in lamb survival. For maiden Merino hogget ewes, there was a 22% difference in marking rate compared to mature multiparous ewes and this was attributable to 24% difference in reproductive rate and 3% difference for lamb survival. Reproductive performance (reproductive rate, lamb survival and marking rate) in maiden Merino hoggets was correlated with that for mature ewes on the same farm, but these correlations were weak or non-existent for ewe lambs. Our findings show that veterinarians can add value to sheep enterprises by working with managers to assess reproductive rate and lamb survival in different ewe cohorts and compare current performance against industry benchmarks. This will inform interventions targeted to ewe age groups and stages of reproductive cycle with greatest opportunity to deliver improvement in farm profitability and animal welfare.

Pre-joining ram exams: a few tricks and an update of MLP ram mating success project

T Gole

For Flocks Sake Pty Ltd, Dubbo, NSW

With a booming sheep industry and rising ram prices there has been renewed interest in what drives ram success and failure. Utilising sheep handling equipment and electronic identification (EID) allows the private practitioner to conduct pre-joining ram exams including semen evaluation in a professional, safe and efficient manner. An update from the research findings of the Merino Lifetime productivity program at the Trangie research station will be given.

Pre-joining ram exams were conducted based on the industry standard 4 Ts, age and body condition score, and semen was collected with electro ejaculation. Semen was assessed as progressively motile and semen morphology was undertaken at independent labs. The Tricks and tips are a system in commercial use by For Flocks Sake Pty Ltd

Although sample sizes are small there is an indication that semen morphology has value as a guide of ram success and further research is warranted.

There is a unique opportunity for sheep vets to serve sheep producers at a higher level. This authors opinion is that pre-joining ram exams is the cornerstone of that opportunity.

Optimising reproduction success through pre joining ewe assessments

A Whale

Livestock Logic, Hamilton, VIC

Background to the fit-to-join resources

Often sheep producers are frustrated they cannot achieve their marking percentage goals, even though they're implementing industry best practice in the lead up to, and during, lambing. An underlying reason for this may be they are joining ewes unfit to rear a lamb.

A review of existing literature and industry information, and coordinated ewe selection case studies on three commercial farms, confirmed an opportunity to improve lamb and ewe survival outcomes by rigorous ewe assessment and selection before joining.

This presentation describes, the methodology, results and risk factors identified in the fit-to-join project.

Post-mortem findings from periparturient non-Merino ewes across southern Australia

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¹Mackinnon Project, Faculty of Veterinary and Agricultural Sciences, University of Melbourne

²Livestock Logic, Hamilton, VIC

³Murdoch University, WA

⁴Pinion Advisory, TAS

Mortality risk increases over the periparturient period for ewes and their progeny. Periparturient ewe mortality results in economic and welfare costs and poses a management challenge for producers. Decreasing ewe mortality would both decrease these costs and increase perinatal lamb survival. However, reducing ewe mortality requires understanding causes of death, and the factors that affect them. Hence 51 non-Merino producers across southern Australia enrolled in a study exploring periparturient mortality using both producer records (reported elsewhere) and post-mortem (PM) investigation (reported in detail here). Over two years (2019-2020), 595 deceased ewes from Victoria, New South Wales, South Australia and Western Australia were submitted by participating producers to veterinarians for gross PM. A standard history was taken and observations at PM were recorded in a custom-built app within an online platform (CommCare©, Dimagi). Aqueous humour and faeces were sampled where possible. Causes of death were analysed as the proportion of submissions with each condition by farm. Dystocia, trauma and/or septicaemia were the most common diagnoses in the submitted ewes (order dependent on year). Hypocalcaemia and dorsal vaginal wall rupture contributed to ewe mortality on some farms. Pregnancy toxemia was diagnosed infrequently, this may reflect the timing of submissions

relative to lambing. For the most common diagnoses, associations with potential risk factors including ewe (age, condition score at death, litter size, litter weight), environmental (rainfall zone, state, pasture type) and management (feed on offer estimates) factors were determined using logistic regression analysis accounting for farm of origin. The results of the risk factor analysis, and a description of the types of dystocia and the commonly observed periparturient trauma and/or septicaemia are discussed, together with the implications of these findings for periparturient ewe management.

Insights into campylobacteriosis in maiden ewe flocks

T Clune

Murdoch University, Perth, WA

Campylobacter fetus and *C. jejuni* are important reproductive pathogens of sheep in Australia and maiden ewes are considered at greatest risk. However, the impact of *Campylobacter* spp. is poorly quantified. This case-control study investigated associations between seropositivity to *C. fetus* or *C. jejuni* and reproductive outcomes in 22 flocks of maiden ewes aged 1–2 years old on farms across southern Australia. Seropositivity to *C. fetus* and *C. jejuni* using a titre cut-off $\geq 1:80$ was identified in 12% (57/462) and 44% (204/462) maiden ewes, respectively. The odds for failing to rear a lamb in maiden ewes with *C. fetus* titre $\geq 1:10$ was 2.01 times that of seronegative ewes ($P=0.027$). However, there was an inconsistent association between *C. fetus* titre $\geq 1:80$ and failure to raise. For *C. jejuni*, odds of failing to rear were decreased for ewes with titre $\geq 1:80$ ($P = 0.007$). *Campylobacter fetus* abortions were confirmed with microbial culture in one flock. In this flock, *C. fetus* titres fluctuated and often waned by lamb marking. Evidence of serological exposure to *Campylobacter* spp. should be considered in the context of other risk factors specific to the flock. Apart from serology, strategies to investigate the impact of *Campylobacter* exposure on ewe reproductive performance includes monitoring ewes for evidence of abortion, lamb necropsies to determine aetiological diagnosis and vaccination trials.

Toxoplasma gondii exposure and associated risk factors in Victorian ewes

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¹The Mackinnon Project, Faculty of Veterinary and Agricultural Science, University of Melbourne

²Melbourne School of Population and Global Health, University of Melbourne

Toxoplasma gondii is a common protozoan parasite to which sheep are especially susceptible. Infection of a naïve pregnant ewe can result in reproductive loss, and it is one of the three most common causes of infectious abortion in Australian sheep. Additionally, undercooked meat from infected sheep is a source of human toxoplasmosis. The prevalence of *T. gondii* infection in Victorian sheep flocks at present is not known, and the risk factors for infection are unclear.

Our aim was to determine the prevalence of antibodies to *T. gondii* in self-replacing ewe flocks across Victoria and describe associated risk factors. A commercially available antibody-ELISA was used on blood samples from 50 randomly selected mature ewes from 50 self-replacing flocks across Victoria (n = 2500), with the multi-stage sampling design accounting for clustering. A questionnaire completed on each flock informed a risk factor analysis.

Seventy-eight percent of farms had at least one positive ewe. Distribution of within-flock prevalence was not normal. Mean within-flock estimated true prevalence was 7% but seven flocks had a greater than 30% within-flock prevalence. Hence low-level exposure to *T. gondii* in ewes is common across Victoria. However, some flocks have a markedly higher level of exposure. Potential risk factors identified for higher flock level exposure are discussed.

Evidence-based approach to investigating poor reproductive performance in maiden ewes

T Clune¹, A Lockwood¹, S Hancock¹, A Thompson¹, S Beetson¹, A Campbell², E Glanville², D Brookes², C Trengove³, C Jacobson¹

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² Faculty of Veterinary & Agricultural Sciences, University of Melbourne, Werribee, VIC

³ School of Animal and Veterinary Science, Adelaide University, Roseworthy, SA

Improving reproductive performance of maiden ewes is pivotal for re-building the Australian ewe flock and improving farm profitability. Here we outline key findings from on-farm investigation of the timing and amount of foetal loss and lamb mortality in maiden ewes on Australian farms, and an evidence-based approach to investigating poor reproductive performance in maiden ewes based on these findings. Our findings show that foetal losses in mid-pregnancy can be an important contributor to lamb mortality in ewe lamb flocks on Australian farms. The proposed methodology can be readily adapted for commercial farms and modified to account risk factors specific the farm system and location. The protocol will allow practitioners determine timing of foetal or lamb loss, which in turn informs mitigation strategies to improve flock reproductive performance.

Case study: ewe lamb foetal loss in south east South Australia

S McGrath

Millicent Veterinary Clinic, Millicent, SA

This paper will describe the investigation of a case of significant mid-term foetal loss in ewe lambs.

The property in question had an identified problem of foetal loss in ewe lambs. The mob was enrolled as a trial site for the Murdoch University Ewe Lamb Fertility project, under which investigation of infertility was undertaken through their protocols. 200 ewe lambs were enrolled as the trial group, measurements were taken at 5 timepoints throughout the period from pre joining through to post lambing. These measurements were liveweight, body condition score, blood sampling for trace elements, vitamin E and serology for the main known infectious causes of foetal loss. 3 pregnancy scans were performed on the mob to identify conception and then subsequent timing of foetal loss, lambing rounds were done to identify number of lambs born alive. Further laboratory diagnostics were performed on known ewes with foetal loss.

1. Summary of data: Of 200 that were joined, 122 ewes conceived (61%), with a total foetus scanning rate of 156%. On a second scan 4 weeks after scan 1, 60 ewes that were previously scanned pregnant had aborted (49% of ewes that were Scanned In Lamb).
The average Live Weight of the mob declined from Scan 1 to Pre Lambing timepoint by 0.9kg. The average liveweight of ewes that maintained pregnancy at pre lambing was 57.6kg compared to 45.1kg of those that had aborted, the average of the total mob was 51.3kg at pre lambing.

Body condition score also declined from Scan 1 to Pre Lambing, the average moving from 3.4 to 3.15.

Results of investigation of infectious diseases were unrewarding. Most notable was the 4 of 30 vaginal swabs of known aborted ewes that returned positive qPCR results for *Chlamydia pecorum*.

2. Mid term abortion in this ewe lamb mob was significant and was the main contributor to reproductive wastage in this cohort. There was a decline in liveweight and BCS in the group during this period of pregnancy. Liveweight declined more markedly in those that aborted. Infectious causes were not definitively diagnosed. This case gives a good template for investigation into reproductive loss. The recommendation to the farmer was to ensure weight gain throughout pregnancy was achieved in future years.



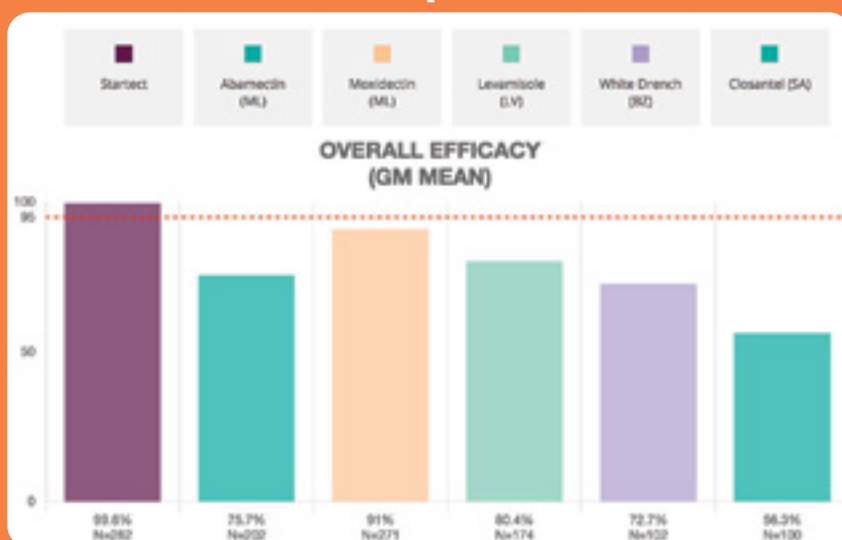
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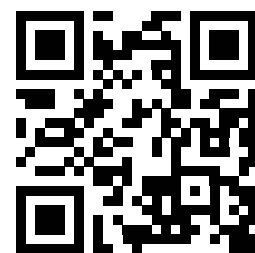
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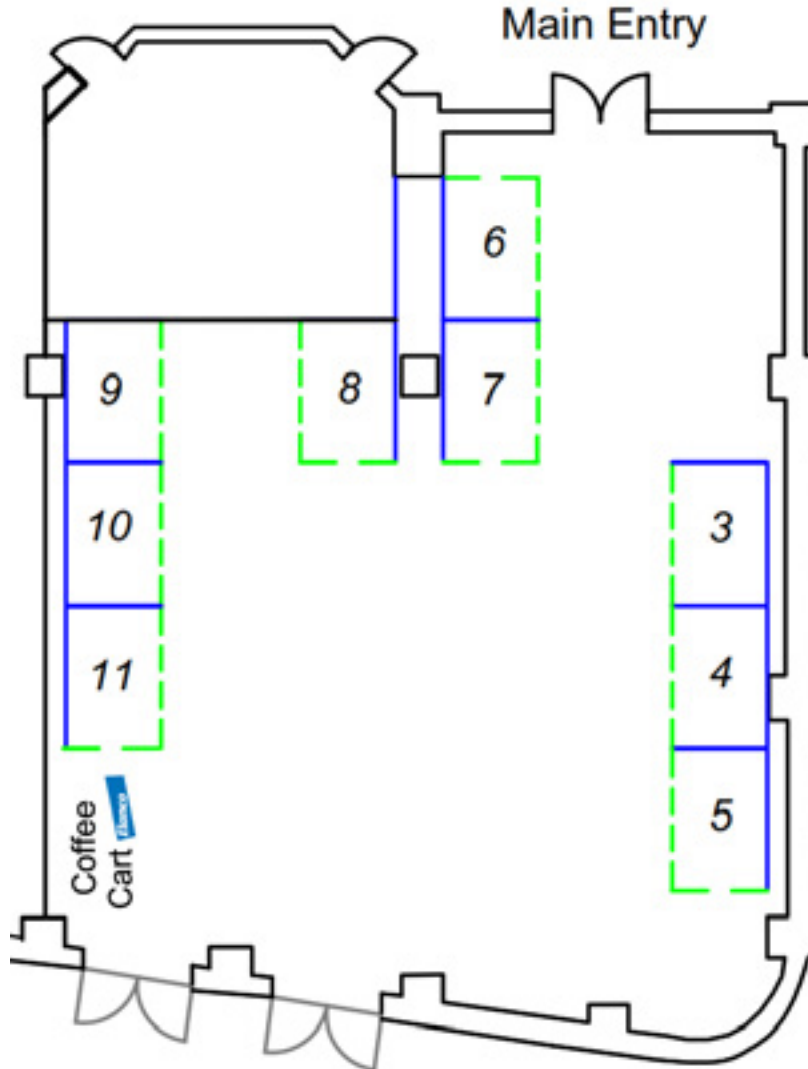
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Jurox, based at Rutherford in the Hunter Valley Australia, is a family owned veterinary pharmaceutical company that markets in excess of 120 proprietary animal health products and employs over 170 staff in Australia, New Zealand, UK and US.

Jurox invests 15% of sales in research and development, much of which is carried out on the group's own research stations. With an expanding export base and growing domestic business, Jurox markets products throughout Australia, New Zealand, Asia, the Middle East, the United Kingdom, Europe and the US.

Zoetis

Stand 5



Zoetis builds on more than 75 years of experience in animal health to deliver innovative, high-quality products and services that benefit our customers. Zoetis discovers, develops, manufactures and markets veterinary medicines, complimented by diagnostic products and genetic tests. Its products serve veterinarians, livestock producers and people who raise and care for farm and companion animals in 120 countries. Our team brings value through the products and services you need to produce healthy livestock and optimise productivity. Zoetis is committed to sustainably advancing animal production in Australia.

Exhibitor Profiles

Dawbuts

Stand 3



Dawbuts actively supports animal health in the agricultural, livestock, pharmaceutical and veterinary industries. Through our services, we aim to improve the general health and well-being of all species of livestock. Our services include laboratory diagnostics, farm services, contract research, consultancy & advice, training, and on-farm diagnostics through the FECPAKG2 platform. Furthermore, we aim to enable farmers, veterinarians, and rural retailers to maximise animal production and welfare.

International Animal Health Products

Stand 10



International Animal Health Products manufactures and markets quality Australian owned and Australian made products. We have a range of solutions for cattle, horses, sheep, goat, pigs and poultry. International Animal Health Products began operations in 1987 and since that time we have been successful in incorporating several existing product lines into IAHP which has led to a diverse product range. This product range includes many well-known brands such as Livamol, BioWorma, Farnam, ProN8ure, Ausmectin and our vet only range. Our aim is to provide solutions to improve the overall growth, health and well-being of your animals and birds. Our innovative research-based solutions include feed additives, medications, probiotics, nutritionals, first aid, biological and worming products while servicing the needs of veterinarians, farmers and owners of livestock.

Minitube Australia

Stand 11



Based in Ballarat, Victoria, Minitube Australia was established in 2004 and services Australia and New Zealand. As a subsidiary of Minitube International, the German based, family-owned company specialising in reproduction supplies for all species, we are committed to offering service to our customers that we hope exceeds your expectations.

We are determined to remain abreast of the latest innovations and techniques being used worldwide and to provide our customers with the tools needed to succeed in their reproduction goals.

Minitube Australia offers a complete range of high quality equipment, consumables and media to assist with semen collection, evaluation, transport, freezing, storage AI and embryo transfer.

Numnuts

Stand 4



Numnuts is a 2 in 1 device that administers fast-acting pain relief along with an elastrator ring in a matter of seconds with a few easy steps. Our NumOcaine is a fast-acting local anesthetic that help to get lambs back up on their feet, mother up and back out into the paddock faster and easier. As a company Numnuts want to aid farmers in supplying them with the resources and knowledge they need to be able to give their lambs the best welfare practices they deserve. Since 2019 we have been able to provide Numnuts to roughly 3% of the Australia sheep flock and we are looking to work alongside Australian vets to see that number continue to grow.

Pacific Vet Stand 6



Pacific Vet Pty Ltd was established in 1993 to supply the veterinary industries with Reproduction equipment for small and large animals Australia wide. Our combined expertise within the industry means we can offer solutions and support to meet our customers' requirements.

To ensure we are keeping up with market demands, our overseas representatives strive to keep us supplied and informed of any new products and technology developing in the veterinary industry.

We continuously try to understand our customers' requirements and have developed our range of products in accordance with their needs and wants, while focusing on customer satisfaction. We endeavour to introduce new product lines to our extensive range as often as possible.

Pacific Vet's products are competitively priced and of premium quality – representing the best value. This has made us one of the market leaders in reproduction equipment for the veterinary industry.

Not only do we keep up to date with changes in the industry, but most importantly, we listen to our customers' needs. Our professional & friendly staff have a proven reputation for providing exceptional service. This has been the driving force behind Pacific Vet's success.

Parasight System Australia & New Zealand



Stand 9

The Parasight System is a proven, standardized automated fecal egg count (FEC) system with significantly less variability and more accuracy than the traditional McMaster FEC test method. Parasight identifies and counts parasite eggs with a sensitivity of 4 eggs per gram in less than 7 minutes using an automated algorithm and software imaging technology. The Parasight System outputs an auditable fluorescent image of the parasite eggs and generates a count of the total eggs per gram in any given sample.

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