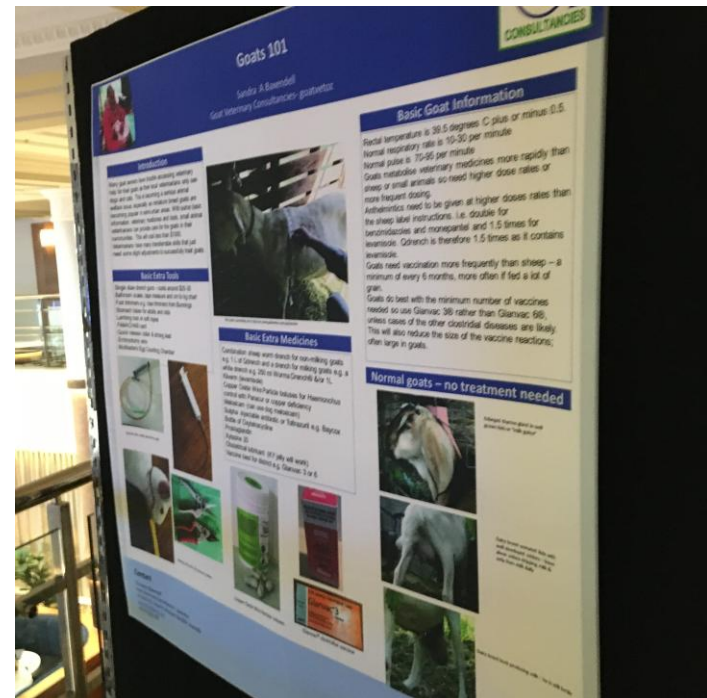


# International Sheep Vet Conference (also covered goats)



# Sandra's key take-aways

- Key points from goat poster presentations & lectures
- Worm control
- What is in the pipeline that will help goat owners



# Keynote Speaker's Net Zero Push Advice

## Potential towards net zero by 2030

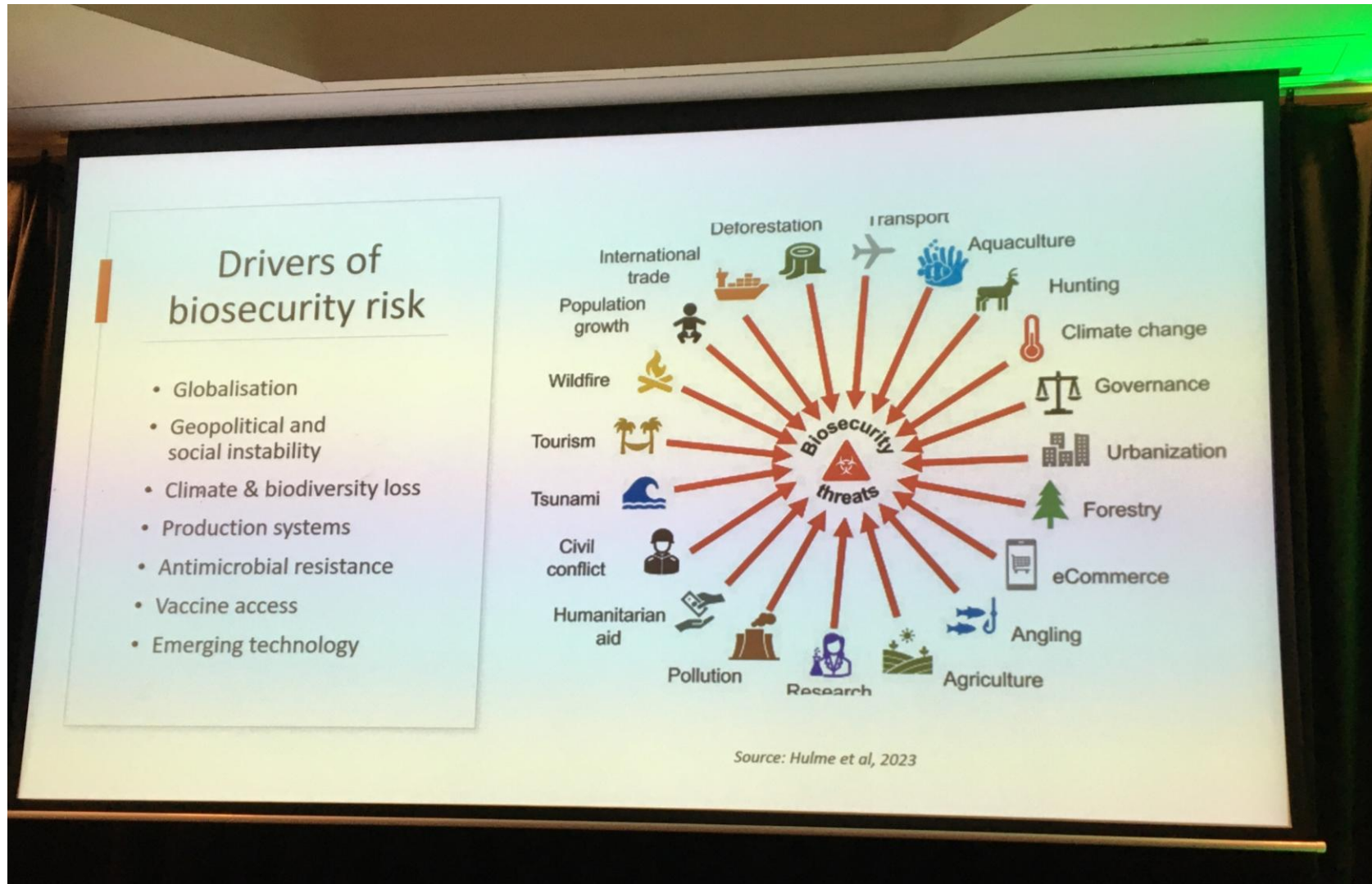
- Pigs and poultry
  - >90% => Manure management and green energy
- Perennial horticulture & wine
  - >90% => Renewable energy, N inhibitors, N rates, on-farm N, biochar
- Grains, cropping, sugar, cotton
  - 50% => N inhibitors, N rates, on-farm N
- Rice
  - 60% => Later flooding, N inhibitors, N rates, on-farm N
- Dairy and feedlots
  - 50% => Feed inhibitors, N inhibitors, N rates, green energy
- Extensive grazing
  - 10-20% => Breeding, legumes



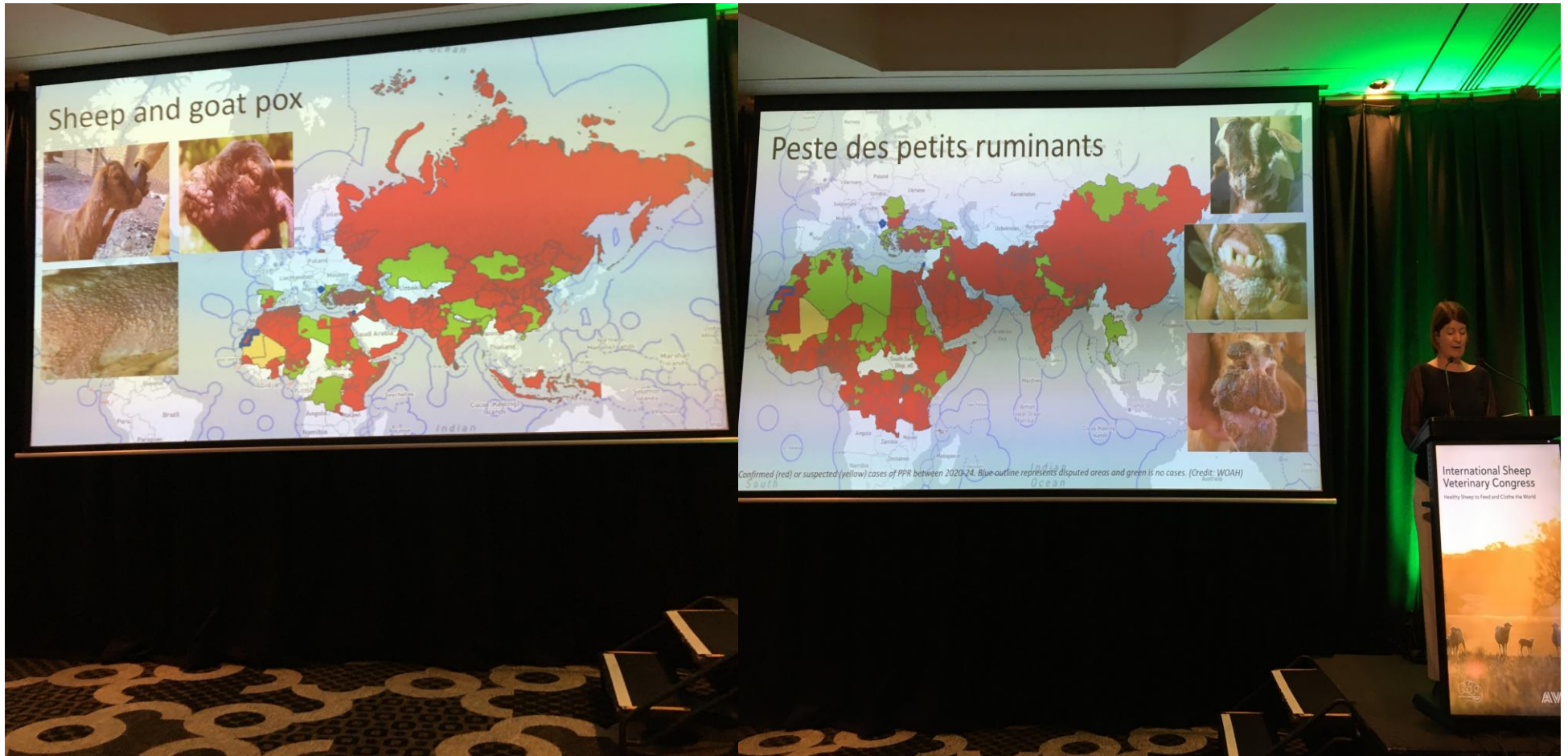
# Buyers of goat products will buy if reduced greenhouse gas (GHG)

- Major companies/lenders want to become net zero so will look at their supply chain & will buy from/lend to farms with less GHG
- If your goat meat is from kids raised more quickly to slaughter weight, then they have less GHG produced
- If your farm buys less Nitrogen fertilizer from overseas, then your goat product has less GHG

# Biosecurity risks are increasing



# Exotic goat disease are spreading & getting closer to Australia



# Keynote from CVO – fake info spreads rapidly

**WAKE UP HUMANITY  
it's A PANdemic**

Foot-and-Mouth Disease Has Hit Slovakia, but Disinformation May Be the Bigger Threat

Does foot-and-mouth disease exist or not? We have a disinformation campaign again

This is the Gujarat state in India, where tens of thousands of cattle suddenly started to die after being given a vaccine by the Indian government.

121.1K views 0:00 / 1:10

2:20 AM · Sep 4, 2022 · Twitter for Android

**Lumpy Skin Disease  
in Humans & Animals in India?**

**Bioterror? Hungary and Slovakia float unconfirmed theory on foot-and-mouth outbreaks**

**Countering disinformation and misinformation in animal health emergencies**

**FAKE**

World Organisation for Animal Health  
Emergency Management

# Everyone needs to take action



A state of global bioinsecurity?

- Emerging disease threats **continue to challenge** food security, animal health & welfare, human health, biodiversity
- Complementary approaches are needed
  - Vaccination
  - Robust biosecurity
  - Strong veterinary services
  - Education & collaboration

The state of the world's animal health

An inaugural global overview of animal health in a changing world

# CAE & SRLV eradicated on a Dutch Island but 3 years later was re-introduced with purchased animals

**Poster MVV**

## Eradication and control of small ruminant lentiviruses on the Wadden island of Terschelling

**René van den Brom**

Read me like a book! See de Bont\*, van den Brom\*, van den Brom\*, van den Brom\*, van den Brom\*  
Department of Small Ruminant Health, Royal GD, P.O. Box 1, 1000 AA Den Haag, the Netherlands  
Department of Parasitology, Wageningen UR, P.O. Box 338, 3720 AH Wageningen, the Netherlands  
Department of Research and Development, Royal GD, P.O. Box 9, 1000 AA Den Haag, the Netherlands

**Introduction and Research Hypothesis**  
This project describes a collaboration between veterinary practice Terschelling, the local sheep and goat farmers association on the island and Royal GD. The aim of the project was eradication of small ruminant lentiviruses (SRLV) on the Wadden Island of Terschelling, and moreover generating attention to the importance of freedom from SRLV. Prion-like virus (PLV) in sheep and caprine arthritis encephalitis (CAE) in goats are progressive infectious diseases that mainly affect the nervous system, the joints, the lungs, and the central nervous system. MV and CAE are caused by MV virus and CAE virus, retroviruses that belong to the group of SRLV (Minguzzi et al., 2015). Since the 1980s, GD runs an accreditation programme for MV in sheep and later added an accreditation scheme for CAE in goats, based on serological screening using an ELISA (Auberts et al., 2021; Paterson et al., 2022).

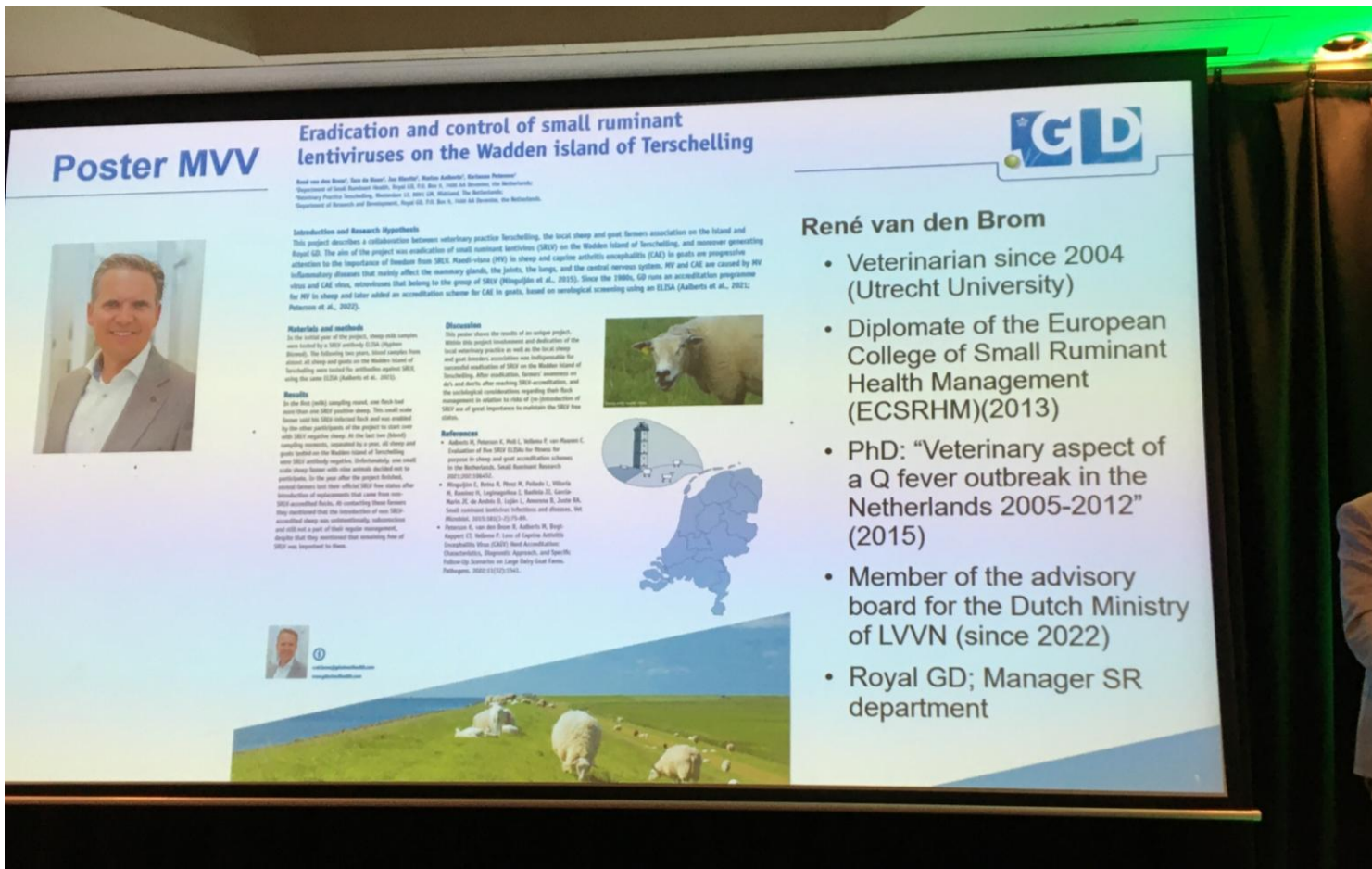
**Materials and methods**  
In the first year of the project, sheep with samples were tested by a PCR method (S. de Bont, 2021). The following two years, blood samples from almost all sheep and goats on the Wadden Island of Terschelling were tested for antibodies against SRLV, using the same ELISA (Auberts et al., 2021).

**Results**  
In the first year (2021) sampling started, one flock had more than one SRLV positive sheep. This could cause disease and the SRLV infection had not yet been eradicated by the other participants of the project to start over with SRLV negative stock. At the end of the first year, all sheep and goats tested on the Wadden Island of Terschelling were SRLV antibody negative. Subsequently, one small scale sheep farmer with other animals decided not to participate. In the year after the project finished, several farmers had their official SRLV free status after introduction of requirements that came from their SRLV accredited flock. All remaining three farmers they mentioned that the introduction of new SRLV-accredited sheep was unfortunately, subsequent and still not a part of their regular management, despite that they mentioned their screening free of SRLV was important to them.

**Discussion**  
This poster shows the results of an original project. Within this project involvement and distribution of the local veterinary practice as well as the local sheep and goat farmers association was indispensable for successful eradication of SRLV on the Wadden Island of Terschelling. After eradication, farmers awareness on MV and dairy after receiving SRLV accreditation, and the serological screening regarding their flock management in relation to risks of (re)introduction of SRLV are of great importance to maintain the SRLV free status.

**References**

- Auberts B, Paterson C, Hill J, Williams T, van Rossum C. Evaluation of the SRLV ELISA for the presence of prion in sheep and goat accreditation schemes in the Netherlands. *Small Ruminant Research*. 2021;202:100423.
- Minguzzi S, Reina R, Ricci M, Polizzi L, Viora R, Andreatti F, Caporinello L, Andreatti G, Scatena M, de Ambris S, Igin L, Amoretti B, Zucchi SA. Small ruminant lentiviruses infections and diseases. *Viruses*. 2023;15(2):279-98.
- Paterson C, van den Brom R, Auberts B, Brugge H, van den Brom R. Use of Caprine Arthritis Encephalitis Virus (CAE) Serology Accreditation (SRLV) for the Control of Caprine Arthritis Encephalitis Virus (CAE) in Large Dairy Goat Farms. *Pathogens*. 2022;11(2):274-81.



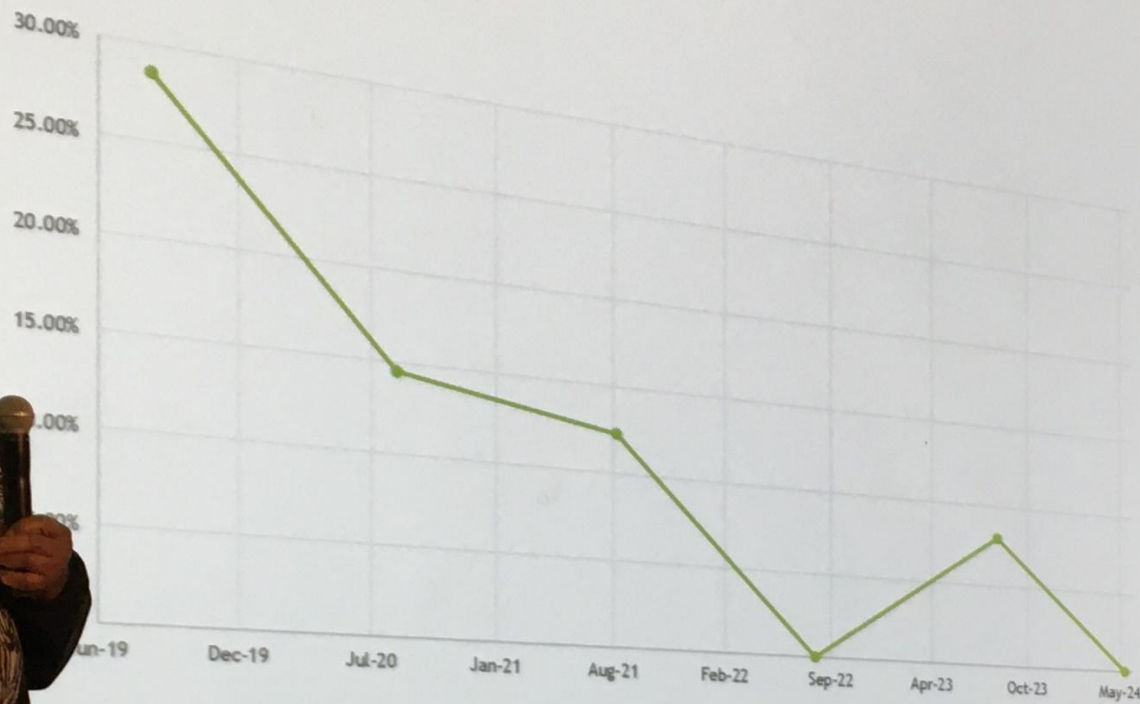
## DGC Eradication Program

- ▶ Started working with Raewyn Pearson Vet Path Lab Massey 2009; SVS Lab in Hamilton presently
- ▶ Initially serum ELISA testing individual animals annually
- ▶ Moved to comparing serum and milk results on both ELISA/PCR
- ▶ Moved to using bulk milk samples
- ▶ Approx 4.3 million in governmental funding and DGC subsidies
- ▶ Eventually only CAE negative herds could supply DGC starting June 2022
- ▶ Perfected the testing in a certified laboratory
- ▶ Benefit for all meat, fibre and milking goats in NZ

International Sheep  
Veterinary Congress

Healthy Sheep to Feed and Clothe the World

# Bulk Milk CAE S/P Trends



# CAE in New Zealand

Caprine Arthritis Encephalitis (CAE) is a debilitating viral disease affecting dairy goats globally. Individual testing to eradicate the virus from a herd is costly when used as a surveillance program. Bulk tank milk (BTM) ELISA testing for CAE has proven to be a cost-effective method to monitor the prevalence of CAE in a population of 60,000 goats supplying a New Zealand Dairy Goat Company. Over the past six seasons, monthly BTM monitoring has been employed to detect positive herds. Subsequent group and/or individual ELISA milk testing were conducted on herds that tested positive on BTM to identify and cull positive individuals. Large herds (700+) with less than 0.4% positive animals have been detected using the CAE BTM ELISA screening. This method is an economically efficient and effective means to monitor CAE prevalence in large commercial dairy goat herds.

# Nutritional stress causes an abortion storm 1

**Case report: Abortion and dystocia storm following shearing of Angora goats**

Susan Robertson, Allan Gunn and Bruce Allworth

Charles Sturt University  
Gulbali Institute  
Agriculture and Food

**The Issue**

Goats are prone to abortion after exposure to stressors, particularly feed restriction, as well as from infectious causes


**Case history**

- Mixed age Angora does were shedded overnight on days 140 and 144 after buck introduction and shorn on day 145 in 2024
- Does in good condition grazing abundant pasture
- Kidding records available for 3 years

**Results**

- A dystocia storm occurred in 2024, 6-11 days post-shedding
- High rate of dystocia requiring assistance (19.7%) cf. previous years ( $\leq 9\%$ )
- High doe mortality over the 6-week kidding period (13.4%) cf. previous years ( $\leq 3\%$ )
- Inability to deliver kids resulting in euthanasia was the major cause of doe mortality (6/17)
- Malaligned, decomposing fetuses the key cause of dystocia

Day after buck introduction	Event
140	Shed overnight
144	Shed overnight



# Nutritional stress causes an abortion storm - 2

...s, particularly feed restriction, as well as

### Case history

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Day after buck introduction	
140	Shed overnight
144	Shed overnight
145	Shear does
150-156	12/127 does died 17/127 assisted dystocia

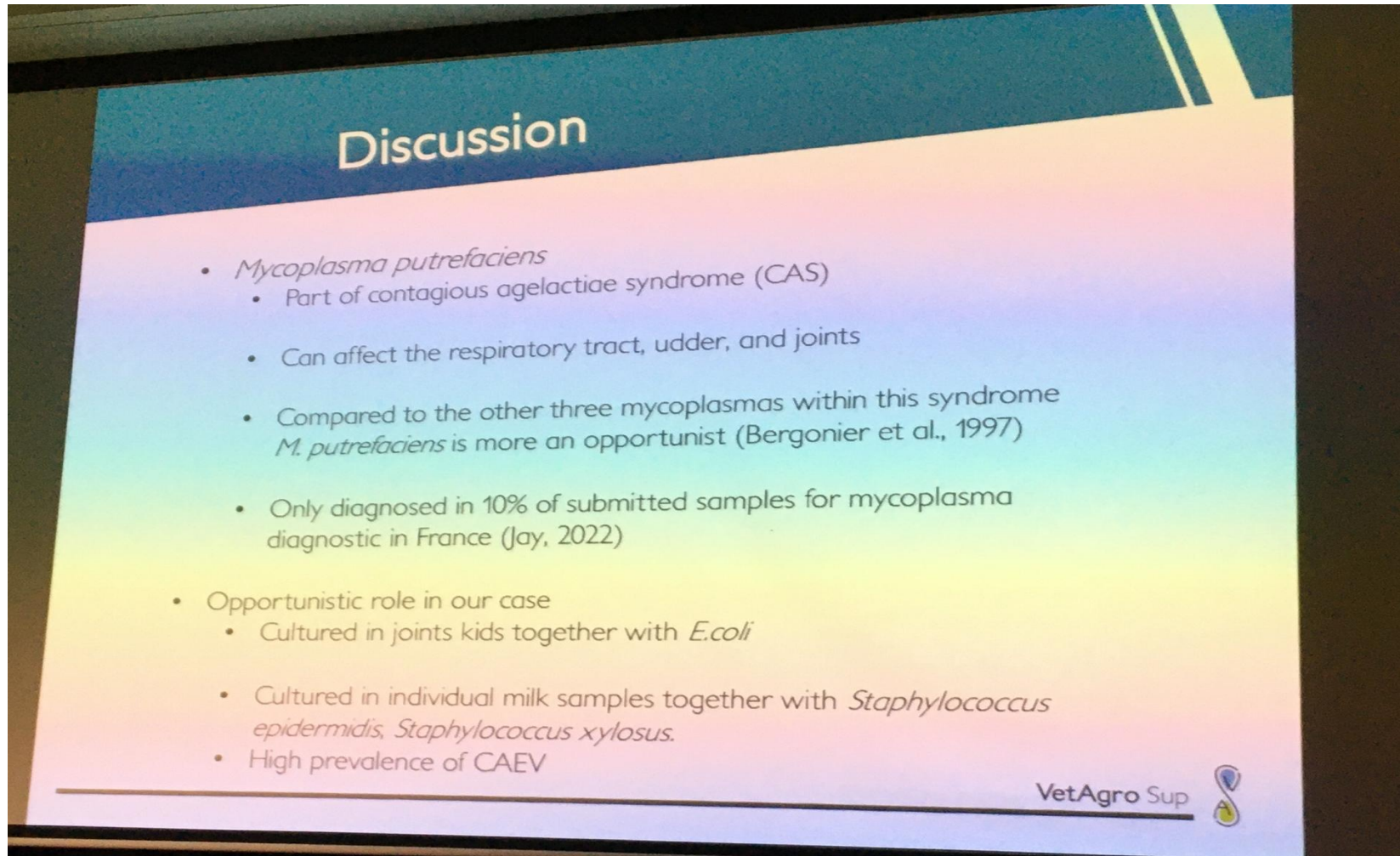
### Key Messages

- Nutritional restriction can cause abortion
- Dystocia storm may result from late term fetal death and abortion
- Raising awareness to modify management may reduce losses




Contact info  
Name: Dr Susan Robertson  
Phone: 02 9933 4199  
Email: srobertson@osu.edu.au

# Presence of *Mycoplasma putrefaciens* in a severe outbreak of polyarthrititis and increased somatic cell count in a dairy goat herd



## Discussion

- *Mycoplasma putrefaciens*
  - Part of contagious agelactiae syndrome (CAS)
  - Can affect the respiratory tract, udder, and joints
  - Compared to the other three mycoplasmas within this syndrome *M. putrefaciens* is more an opportunist (Bergonier et al., 1997)
  - Only diagnosed in 10% of submitted samples for mycoplasma diagnostic in France (Jay, 2022)
- Opportunistic role in our case
  - Cultured in joints kids together with *E.coli*
  - Cultured in individual milk samples together with *Staphylococcus epidermidis*, *Staphylococcus xylosus*.
  - High prevalence of CAEV

VetAgro Sup 

**Case description** A severe outbreak of polyarthritis in goat kids (107/300 kids) and primiparous goats (55/61 goats), together with an elevated somatic cell count (SCC;  $> 6.0 \times 10^6$  cells/mL; ref.:  $< 1.0 \times 10^6$  cells/mL) in the multiparous goats was observed in a herd of 180 dairy goats, in October 2024. Bacterial cultures were taken from the affected joints of three kids at post-mortem, and from one clinical mastitis case. During a farm visit, potential risk factors were identified, and blood samples were taken from ten goats for CAEV and BTV serology.

**Findings:** Bacterial cultures of joint fluid were positive for *Escherichia coli* and *Mycoplasma* spp. Bacterial culture of the milk sample was positive for coagulase-negative *Staphylococci* and *Mycoplasma* spp. A *Mycoplasma putrefaciens* specific PCR was positive for both the bacterial cultures from the joint and the milk. Ten and two out of the ten blood samples for serology were positive for CAEV and BTV, respectively. **Risk factors identified included: high stocking density, poor bedding hygiene, pooling of colostrum and the presence of CAE.**

**Conclusions:** The role of *M. putrefaciens* in this case seems to be opportunistic, and secondary to concurrent diseases and management shortcomings. The multi-morbidities on this farm required intense veterinary-farmer collaboration towards an acceptable outcome for the farmer.

## Follow up

- Adult goats
  - Somatic cell count decreased within two months but remained above the required  $1.25 \cdot 10^6$  cells/mL
  - Milk production didn't recovered
- Kids:
  - Only around 80 kids (out of 300 at the beginning) remained unaffected
- Because of the loss of milk production, high prevalence of CAEV, *M. putrefaciens* and the loss of one entire generation kids → the farmer stopped with the dairy goat farm

VetAgro Sup



# Clinical presentations of thymic neoplasia in goats Mary C. Smith



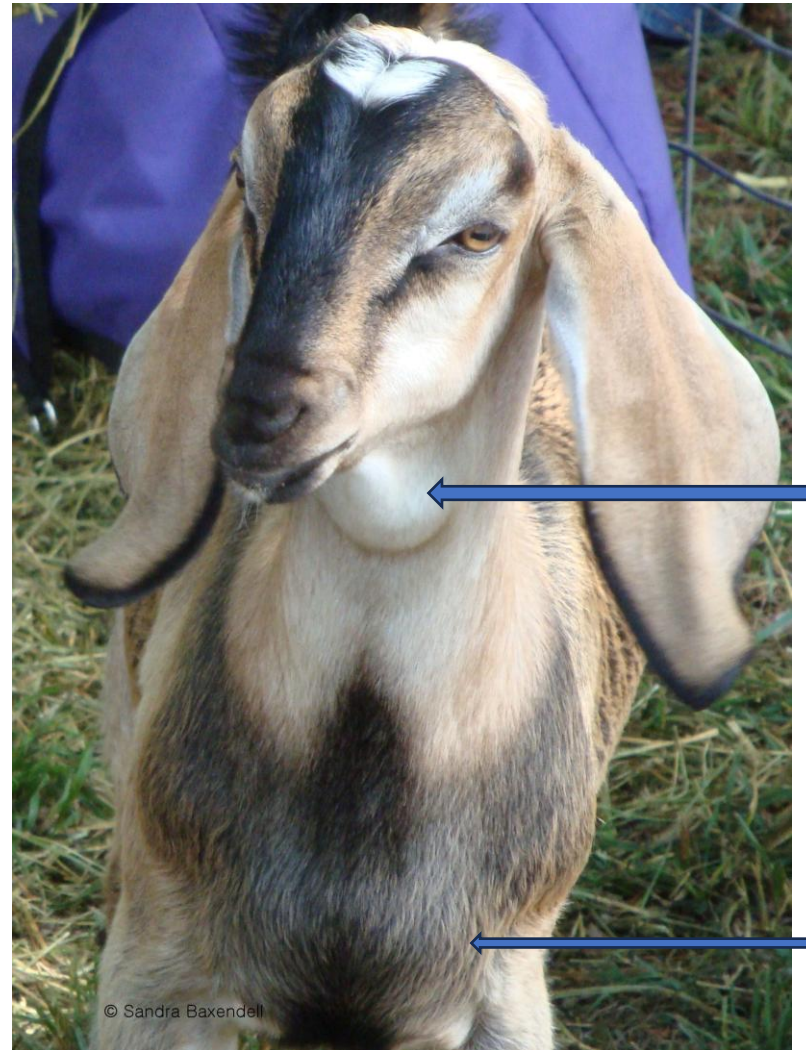
**Findings:** Cases seen by the author were **mostly 10 years or older**, pets or sanctuary animals, and exhibited **weight loss, bloat, dyspnea or muffled heart sounds**. Thymic neoplasia was diagnosed at necropsy in 11 goats (out of 719) during the 17-year period, with a prevalence of approximately 1.5%.

...Ages ranged from 7 to 16 years. The tumour was judged to be incidental in five cases and contributing to clinical signs such as respiratory distress as a space-occupying mass in the thorax of five goats. One upper cervical mass was implicated in dysphagia.

Thymic tumours were diagnosed from biopsies or farm necropsies from 17 goats, often without clinical history. These included nine cervical masses, two thoracic tumours mistaken by the submitter for lung, and six other thoracic masses. ....

# Key Points about Thymic tumours

- If in the neck – monitor or surgically remove
- If in the chest – euthanize



© Sandra Baxendell

# British Goat Vet Society Disbudding survey



Reasons for a discussion:

- Increased welfare awareness
- Sustainable farming initiatives
- **Public perception...**
- **Consumer trust...**
- Time to examine farming traditions?
- **Can/should we modify farming practices - to avoid “mutilations”?**

Swiss food labels must declare animal suffering from July



International Sheep Veterinary Congress  
27-31 October 2025 | Wollongong, NSW

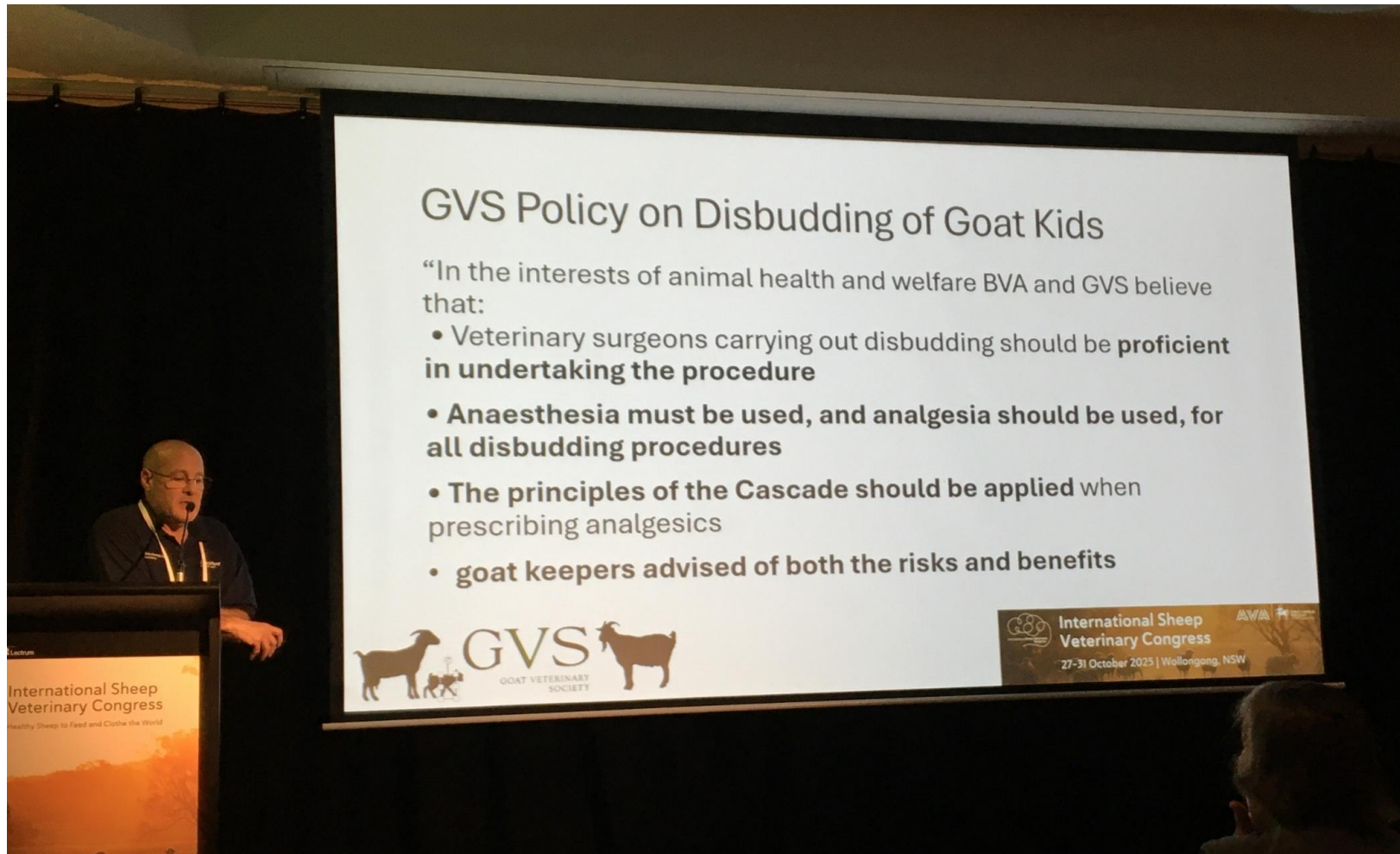
**GVS**  
GOAT VETERINARY SOCIETY

AVA

# UK vets use anaesthesia Plus pain relief (meloxicam) & spray



# British Goat Vet Soc policy



# Early diagnosis of enzootic nasal adenocarcinoma (ENA) in goats: A preliminary study

INTERNATIONAL SHEEP VETERINARY CONGRESS  
27-31 OCTOBER 2025  
WOLLONGONG AUSTRALIA  
Healthy Sheep to Feed and Clothe the World

SCRUM  
SERVICIO CLINICO DE RUMIANTES  
FACULTAD DE VETERINARIA DE ZARAGOZA

EUROPEAN COLLEGE OF  
Small Ruminant  
HEALTH MANAGEMENT

INTERNATIONAL SHEEP  
VETERINARY ASSOCIATION

## Clinical Signs

seromucous nasal secretion, snoring, coughing, sneezing, head shaking



Seromucous nasal secretion



Washed nose



Exophthalmos and skull deformations

**Introduction:** Enzootic nasal adenocarcinoma (ENA) of goats, also known as an enzootic nasal tumour, is a contagious neoplasm of the nasal mucosal glands aetiologically associated with the **betaretrovirus ENTV-2**. Clinical signs are absent in the early stages when the tumour is small, but as the disease progresses, symptoms such as **dyspnea, seromucous nasal discharge, snoring, coughing, exophthalmos, and skull deformities** are observed. There is no effective treatment or vaccine, and disease control on affected farms is challenging due to the apparent lack of humoral immune response, making detecting preclinically affected goats difficult.

**Objectives:** To assess the efficacy of nostril thermography and RT-PCR from nasal swabs for the early detection of enzootic nasal adenocarcinoma (ENA) in goats.



Healthy Sheep to Feed and Clothe the World

INTERNATIONAL SHEEP VETERINARY CONGRESS

27-31 OCTOBER 2025  
WOLLONGONG AUSTRALIA

SCRUM

SERVICIO CLINICO DE RUMIANTES  
FACULTAD DE VETERINARIA DE ZARAGOZA

EUROPEAN COLLEGE OF  
Small Ruminant  
HEALTH MANAGEMENT



## Materials and Methods

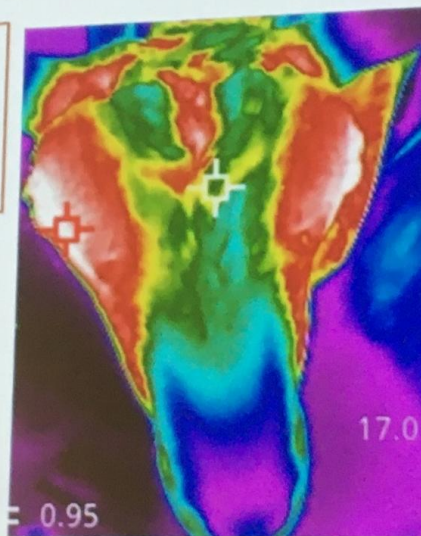
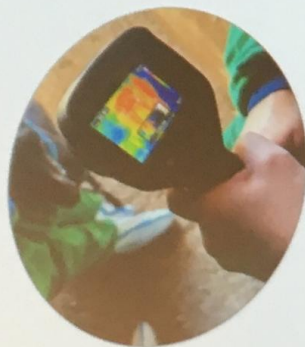
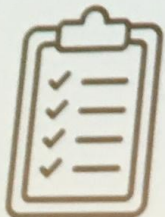
Ethical approval (reference PD29/24 NE)



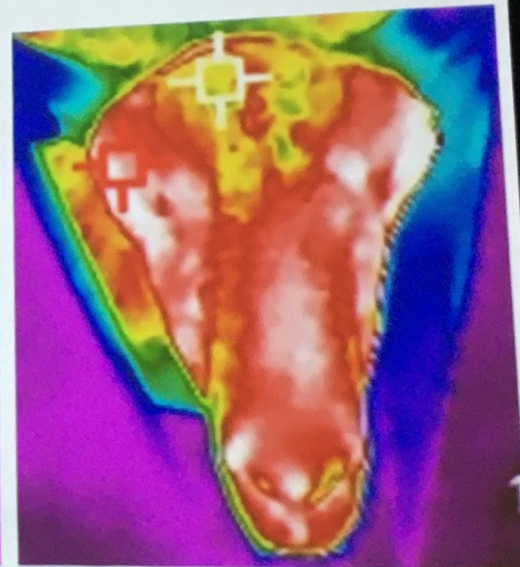
74

Clinical  
examination

Thermographic  
images of the  
nostrils



Healthy goat




ENA

# Caesareans don't affect subsequent ewe fertility

Previous published research

Fertility following emergency C section (due to dystocia)



Re-mated	Pregnancy rate	Citation
19/52 (36.5%)	18/19 (94,7%)	König & Renkema 1983
36/53 (67.9%)	35/36 (97,2%)	Mosdøl 1986
124/124 (100%)	112/124 (90,3%)	Majeed et al. 1993
16/89 (18.0%)	16/16 (100%)	Brounts et al. 2004
89/156 (67.1%)	83/89 (93,3%)	Voigt et al. 2021

Limitations: pre-selection of re-mated animals; Variety of influential factors  
no control group!!  
only pregnancy rate was studied (how about litter size, stillbirth, abortion etc?)

# University did caesareans to train vet students then kept the ewes

## Descriptive results



Mode of Previous Delivery	Only Vaginal	C Section	Vaginal Post C Section
<b>(n = 411 paired fertility records)</b> Subsequent pregnancy rate	<b>(n = 233)</b> 97.0% (226/233)	<b>(n = 122)</b> 91.0% (111/122)	<b>(n = 56)</b> 94.6% (53/56)
<b>(n = 390 pregnancy records)</b> Mean number of mating attempts to achieve subsequent pregnancy (median; range)	<b>(n = 226)</b> 1.4 (1; 1-5)	<b>(n = 111)</b> 1.6 (1; 1-5)	<b>(n = 53)</b> 1.8 (2; 1-7)
Mean subsequent litter size (median; range)	1.9 (2; 1-4)	1.6 (2; 1-4)	1.8 (2; 1-7)
Mean subsequent number of live-born lambs (median; range)	1.8 (2; 0-4)	1.5 (1; 0-4)	1.6 (2; 1-3)

## Results – multivariable analyses



**No significant influence** of planned C section on subsequent conception, stillbirth, perinatal lamb mortality, lamb birth weights or the incidence of premature foetal death (mummification and abortion)

**Significant** reduction of litter size immediately following a C section compared to animals following vaginal delivery only ( $p=0.001$ )

Litter size returned to pre-caesarean levels in further follow-up pregnancies

An increased number of required synchronisation / mating attempts to achieve pregnancy was primarily associated with increasing ewe age ( $p=0.025$ ), but an immediately preceding C section also showed significance ( $p=0.033$ )

# Immuno-castration doesn't prevent buck smell in meat

**Buck smell**

**Buck smell is relevant for the marketing of meat**

The studies only determined the weight differences between the various groups. According to these findings, castration does not offer any advantages for male kids of dairy goats.

However, it was not taken into account that when fattening beyond sexual maturity, a buck smell is still detectable after slaughter, especially in the fat. Some German customers find this unpleasant, so avoiding the buck smell is a decisive factor for some fatteners.

Immunocastration did not result in a significant reduction in buck smell in this regard. Further targeted studies would be necessary here.

Murata et al. (2014): Identification of an Olfactory Signal Molecule that Activates the Central Regulator of Reproduction in Goats. *Current Biology* 2014,24:681-86.

30.10.2025

17

# Hong Kong Vet School's solution to teaching scrotal palpation

**Fig. 2. Testicles in 3D software; L-R: normal, epididymitis head, epididymitis of tail, orchitis, micro-orchid**



**Fig. 3. Cast of 'normal' testicle**



**Fig. 4. Final model in scrotal sac**

# Johne's disease affects fertility in sheep

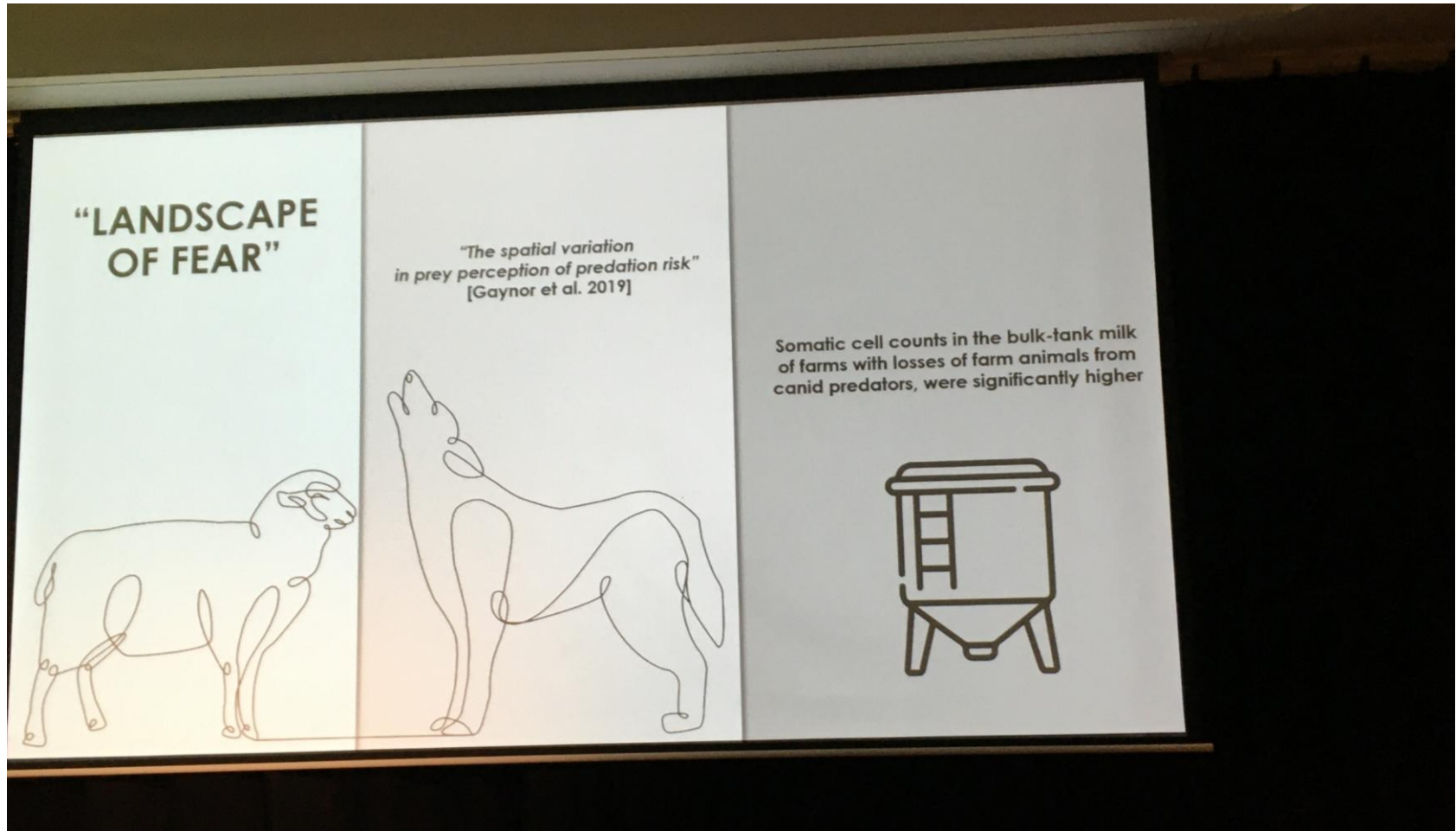


**Methods:** At pregnancy diagnosis, multiple pooled faecal samples were collected from pregnant and non-pregnant ewes in over 93 flocks in **UK and NZ**. Samples were screened by MAP specific qPCR.

**Results:** Over **70% of the flocks** in both countries were infected with MAP. A higher proportion of the non-pregnant ewe groups were infected with MAP compared to the pregnant groups. Among the infected pools a significantly higher burden of MAP bacteria (lower Ct-value) was detected in the pools from non-pregnant ewes compared to pregnant ewes, suggesting either a higher prevalence of MAP shedding individuals and/or higher concentration of MAP in the non-pregnant ewes.

**Conclusions:** These results suggest **MAP may be a contributor to reproductive failure, and therefore increased premature culling**, in infected flocks in both countries. The non-specific symptoms of MAP infection mean it is **often underdiagnosed**, and these results suggest MAP's importance to productivity may be underestimated.

# Canine predators increased Bulk Milk Cell Counts



# Rangeland does fertility

## CONCLUSIONS – WHAT WE LEARNT

- There are lots of things effecting Pregnancy and scanning rates in Rangeland does. Scanning and pregnancy rates vary widely (scanning 0-169%; pregnancy 0-94%)
- There are diseases out there- at varying levels (0-58% seroprevalence).
- The Rangeland environment may be somewhat protective of infectious diseases
- Chlamydia exposure is very common – unknown strain
- Pestivirus, Leptospirosis Gryppotyphosa and CAE antibodies found for the 1<sup>st</sup> time in Rangeland populations.
- Wild bucks can be a disaster to a controlled breeding program

*If you don't look, you don't find!*

## Introduction

Reproductive performance is a critical factor in commercial goat farms' productivity and economic viability. This study will inform the Australian meat goat industry and livestock veterinarians in making management decisions.

**If you don't test you don't know**

## Methods

Rangeland cross does (n=1764) from three mobs, kidding in August 2024, October 2024 and April 2025 were tagged, weighed and pregnancy tested (NSW DPI AEC approval number OAEC-0639). Blood samples were collected from 40 does in each mob. Diagnostic tests for diseases expected to affect reproductive performance were conducted by EMAI and UWA.

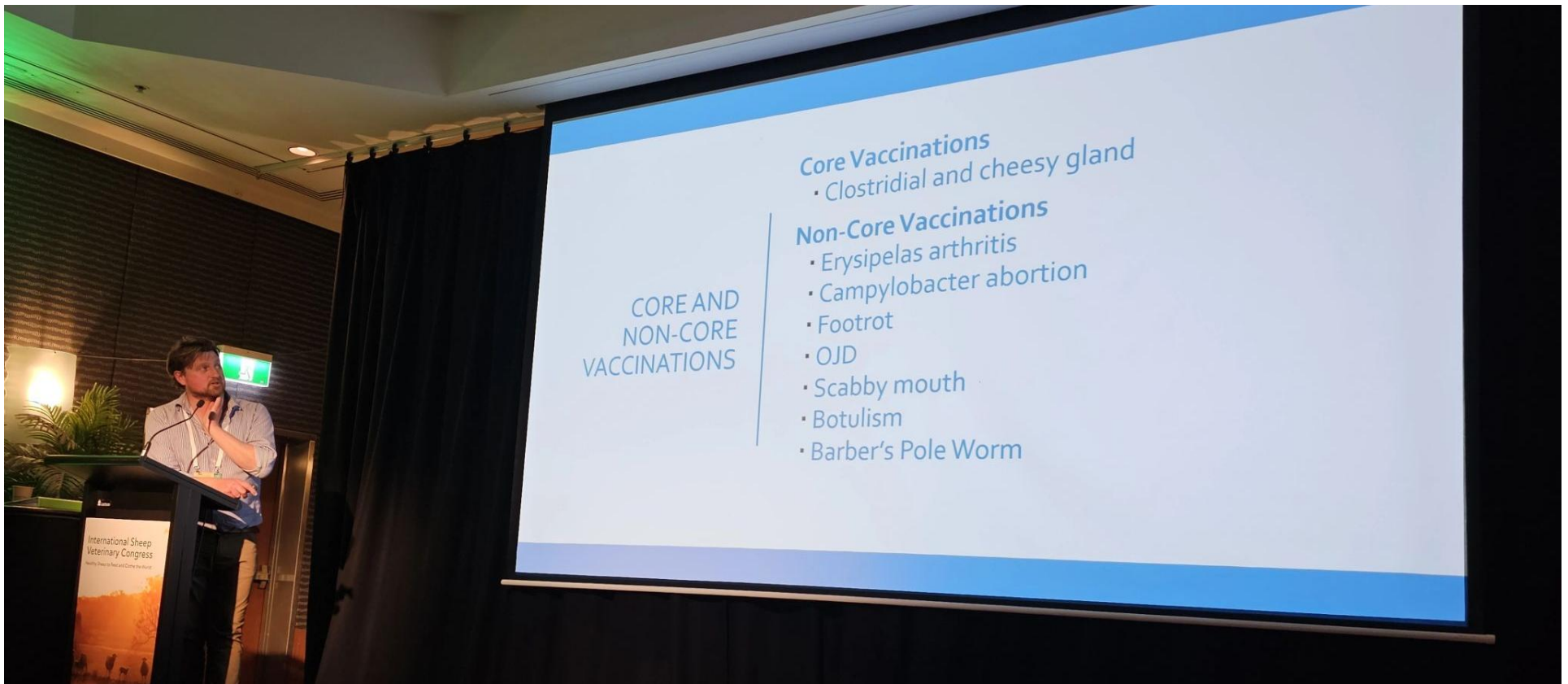
## Results

**Table 1. Reproductive rates and disease prevalence across three mobs of rangelands goats on a NSW case study farm**

	Mean prevalence % (range in between mobs)
Weight (kg)	49.9 (43-56)
Pregnancy scanning rate (%)	154.5 (154.2-154.9)
Weaning rate (%)	84.8 (79-90)
Disease Prevalence (%)	
Chlamydia spp.	50 (28-55)
Leptospira spp.	9.17 (2.5-15)
Caprine Arthritis Encephalitis (CAE)	0.83 (0-12.5)
Toxoplasma gondii	3.1 (0- 10)
Brucella spp.	0
Q Fever ( <i>Coxiella burnetii</i> )	0
<u>Pestivirus</u>	1.7 (0-2.5)

Brucellosis and Q-fever were not detected. *L. pomona* was the most common Leptospira strain identified. Bovine Viral Diarrhoea virus (BVDV) was identified.

# Sheep vaccination recommendations



# Enterotoxaemia – poor responses in sheep so may need every 3 months

## CLOSTRIDIAL VACCINATION TIMING

### Pulpy Kidney

- Effectiveness of vaccine is only 3 months
- So need 3 monthly boosters in high risk situations
- High risk situations is high growth rate feeds, rapidly digestible
- Heavy grain diets, lush clover/lucerne/forage crops



# My goat recommendations

## Vaccinations for Goats



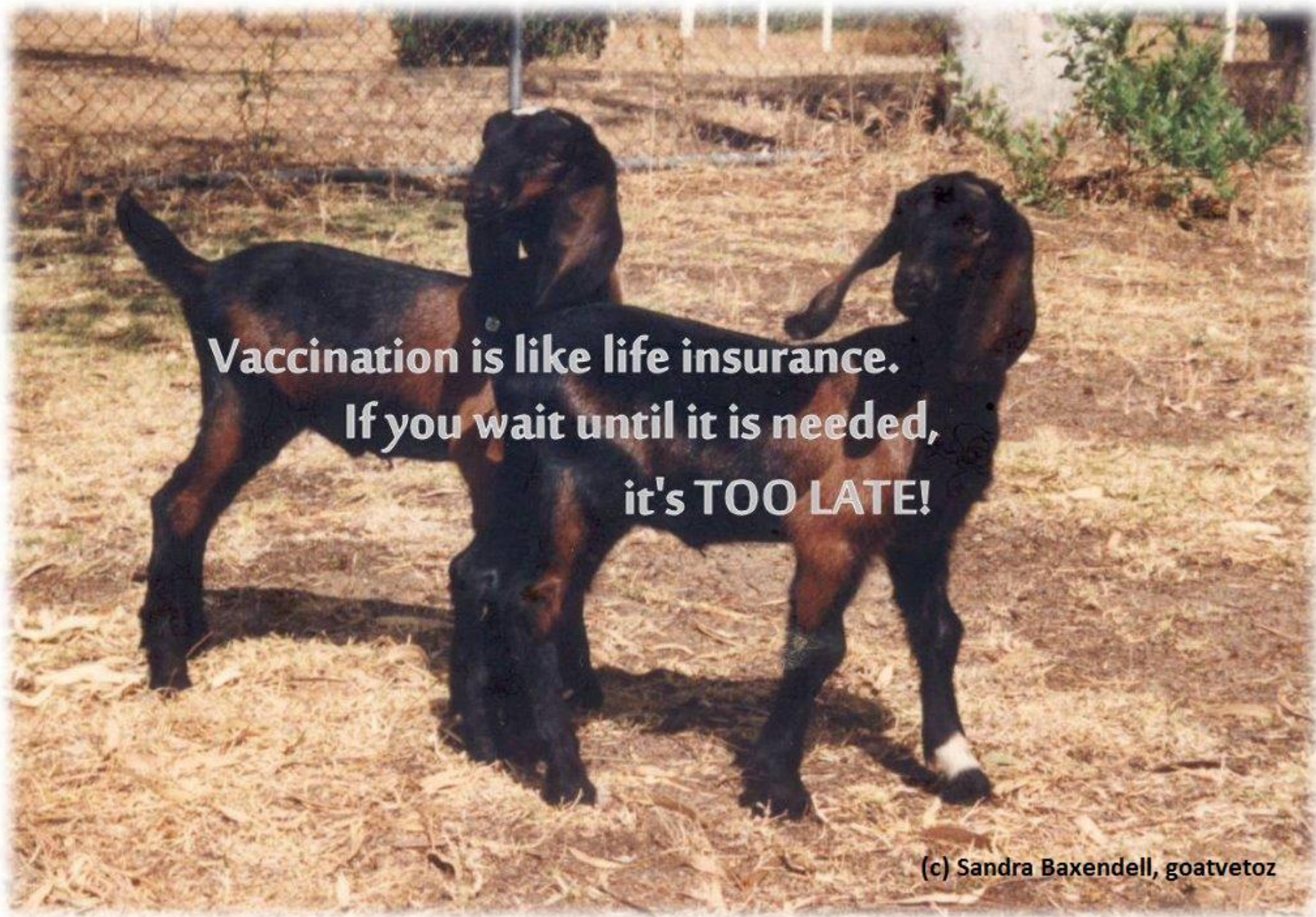
Email [goatveto@gmail.com](mailto:goatveto@gmail.com)

**Goat** *Veterinary Consultancies* - goatveto

This recorded Zoom training (\$25) covers:

- what vaccinations do goats need and how often ?
- 3 in1, 5 in 1 or 7 in 1 ? Which one to use?
- What about Gudair? Scabigard ? Lepto?
- How are tetanus anti-toxin & tetanus vaccine different ?
- When should kids get their first vaccines?
- Notes (4 pages & references) provided.

**Goat** *Veterinary Consultancies* - goatveto



**Vaccination is like life insurance.  
If you wait until it is needed,  
it's TOO LATE!**

(c) Sandra Baxendell, goatveto

## Enterotoxaemia/Pulpy Kidney in Kenyan small ruminants

**Enterotoxaemia prevalence of 9.5%** was recorded among small ruminants, with nutrition mismanagement and sudden dietary changes identified as major predisposing factors. Poor veterinary services, limited vaccine access, and inadequate community awareness exacerbated the outbreak. Mortality rates were significant, with an estimated **7.1% of the county's sheep population** approximately 385,311 animals succumbing to the disease annually. Interventions such as **vaccination campaigns**, improved dietary practices, community education, and strengthened surveillance systems significantly mitigated the disease's impact. By 2024, **prevalence reduced to 3.4%, and mortality rates declined to 3.1%.**

ISV Conf overview ... Saved to this PC

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onlinelibrary.wiley.com/doi/10.1111/avj.70017

Goatvetoz Home SANDRA BAXENDEL... Imported From IE send link Getting Started Imported From Fire...

SECTIONS PDF TOOLS SHARE

## Diseases of dairy goats in intensive farming systems in Northern Croatia

Antun Kostelić<sup>1</sup>, Petra Bratić<sup>2</sup>, Gordan Šubara<sup>3</sup>, Dragutin Vincek<sup>4</sup>, Monica Darrer<sup>1</sup>, Sofija Džakula<sup>5</sup>

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**Background:** The production of goat milk in Croatia is primarily based on intensive farming systems on family farms. In the northern part of Croatia, 60% of the total amount of goat milk is produced. The production is mostly based on the Alpine breed.

**Research Aims:** The goal of the research was to diagnose diseases that occur in such farming systems.


**Methods:** The study was conducted on 43 farms, and the following methods were used: history taking, clinical examination, post-mortem examination, serological, coprological, and bacteriological tests.

PDF EN It was found that the health of goats and herds is threatened by the following

**Results:** It was found that the health of goats and herds is threatened by the following infectious diseases: **caprine arthritis encephalitis (CAE), listeriosis**, infectious ecthyma, and **caseous lymphadenitis (CLA)**. Furthermore, it was determined that one of the biggest problems is **CAE, with a prevalence of over 80%**. The disease clinically manifests in **38% of the population**. Listeriosis occurs occasionally in herds that feed on silage. Increased frequency of the disease was noted during dry periods due to the contamination of grass with soil during silage making. Clinical mastitis most often occurs during suckling in kids in 5% of goats, while subclinical mastitis is present in 23% of the population. Diseases diagnosed due to improper feeding include ketosis, ruminal acidosis, and hypocalcemia. As expected, parasites in such a farming system do not significantly threaten goat health, except for coccidiosis, which is most common in kids. One of the common mistakes is the failure to remove horns, which leads to mutual injuries among goats.

**Conclusion:** In conclusion, we can say that **herd health management must be focused on eradicating diseases such as CAE and CL**, as well as improving the quality of feeding.


# Q fever affects all animals but goats caused hundreds of human cases in the Netherlands



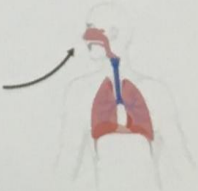
**International Sheep Veterinary Congress**  
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## *Coxiella burnetii* - an intracellular, Gram-negative bacterium

- Zoonosis: Q fever in humans and coxiellosis in animals
- Two phase variations according to their LPS structure
  - Phase I (virulent)
  - Phase II (avirulent)
- main targets are macrophages and trophoblasts
- reservoirs: ruminants suffering from reproductive disorders
- shedding during abortion/parturition with birth products, but also through faeces and milk
- airborne disease (oral route?, ticks?)
- less than 10 bacteria causing illness in humans
  - Acute: flu-like symptoms
  - Chronic: Endocarditis
  - Post-Q-Fever-Fatigue-Syndrome



Inhalation of contaminated aerosols and dust



# Europe has a Q fever/coxiellosis surveillance system

**Pan-European Q fever surveillance Network**

MoreDun Research Institute

GD

ICRAD Q-Net-Assess: Improved molecular surveillance and assessment of host adaptation and virulence of *Coxiella burnetii* in Europe (2023-2026)

Q-NET-ASSESS

WP lead(s)

GD, NEIKER, sciansano, MoreDun Research Institute, NEIKER, INRAE, sciansano, anses

WP1 Collect/collate *C. burnetii* positive samples / isolates

WP2 Optimise isolation methodologies

WP3 *C. burnetii* genomic sequencing

WP4 Functional genomics of *C. burnetii*

WP5 Establish Pan-European Q fever monitoring and genotyping network

Existing isolates

Collate information from WP1-4

Subcontractors

icrad

Animal & Plant Health Agency

ANSES, INRAe

Royal GD

MRI (APHA)

FLI

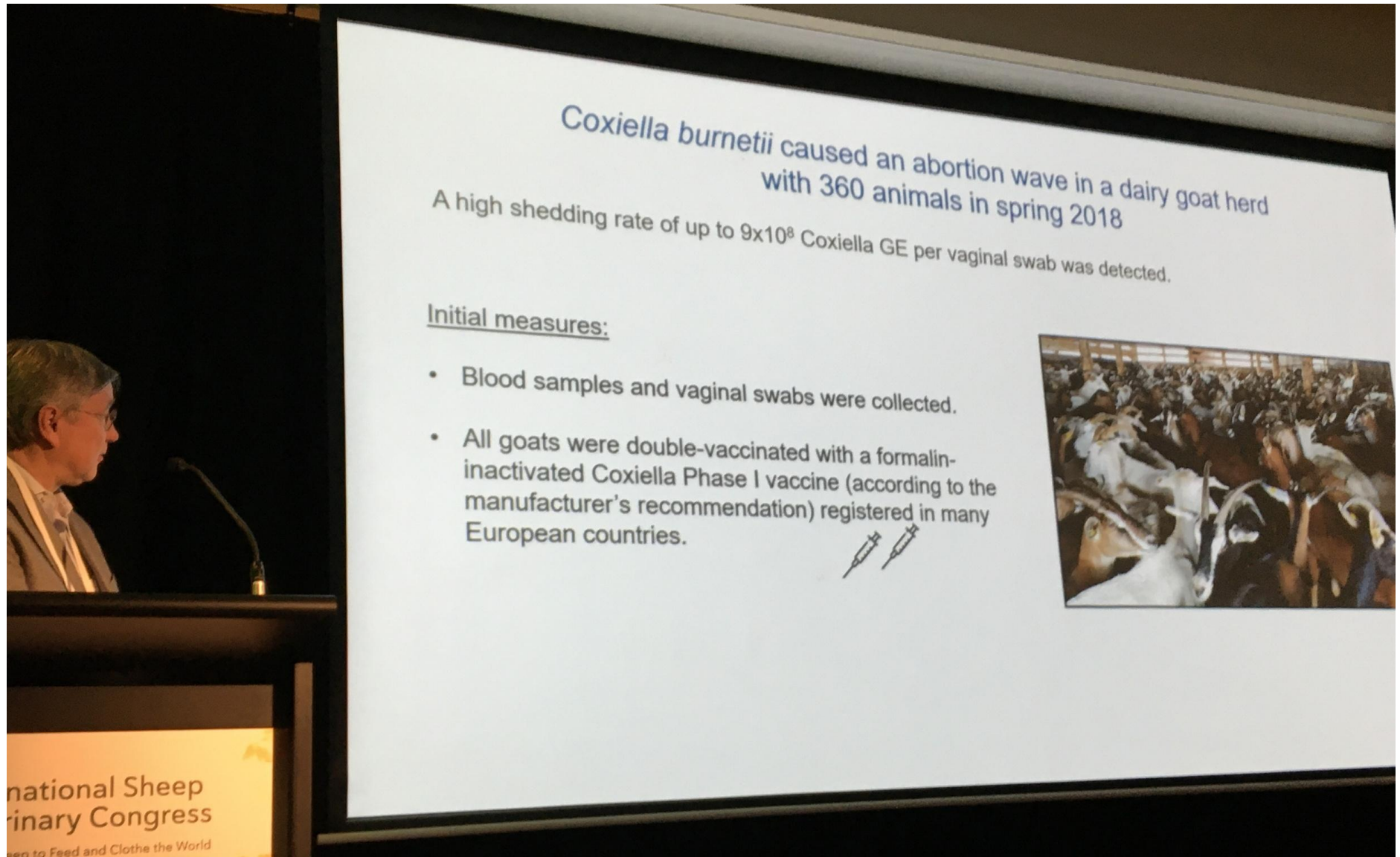
NEIKER

SCIENSANO (DGZ)

International Sheep Veterinary Congress

Healthy Sheep to Feed and Clothe the World

# Offspring vaccination as a strategy to control *Coxiella burnetii* shedding in dairy goats


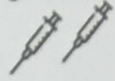


*Coxiella burnetii* caused an abortion wave in a dairy goat herd with 360 animals in spring 2018

A high shedding rate of up to  $9 \times 10^8$  *Coxiella* GE per vaginal swab was detected.

Initial measures:

- Blood samples and vaginal swabs were collected.
- All goats were double-vaccinated with a formalin-inactivated *Coxiella* Phase I vaccine (according to the manufacturer's recommendation) registered in many European countries.



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# Vaccinating offspring builds herd immunity to Qfever/coxiellosis



**Summary – Vaccination Trial**

Vaccinating female offspring with a Coxiella Phase I vaccine before their first mating:

- Induces a long-lasting antibody response
- Helps to establish herd immunity
- Controls coxiellosis in the long term
- Reduces side effects and costs

This approach has also been successfully tested in sheep and dairy cattle (Böttcher et al. 2022). 

# Serious vaccine reactions in goats esp. annual boosters

Side effects after vaccination:

- Skin swellings
- Lameness
- Hyporexia
- Milk drop



Especially annual booster vaccinations, as recommended by the manufacturer, lead to increasing side effects.

Disorder	Sheep	Goats	Cattle
Systemic disorders	~180	~120	~100
Mammary gland disorders	~10	~10	~10
Reproductive system disorders	~10	~10	~10
Application site disorders	~10	~10	~10
Digestive tract disorders	~10	~10	~10
Respiratory tract disorders	~10	~10	~10
Musculoskeletal disorders	~10	~10	~10

Number of cases

Legend: Sheep (blue), Goats (orange), Cattle (dark blue)

Labels for Systemic disorders: Milk drop, Hyporexia, Lethargy, Death

Labels for Reproductive system disorders: Abortion, Oestrus disorders

EudraVigilance - European database of suspected adverse drug reaction reports  
access date: 10 September 2025, <https://www.adrreports.eu/vet/en/index.html>

World Sheep Congress  
Clothe the World

In Australia we vaccinate people  
as we can get it from dust,  
marsupials etc

There is no animal vaccine

WILL YOU BE  
NURSING MORE  
THAN ANIMALS?

**VETERINARY NURSES ARE AT HIGH RISK OF Q FEVER**

Q fever, caused by *Coxiella burnetii* exposure, can have serious and long-lasting consequences.

For more information on Q fever please speak to your doctor or visit [www.qfeverfacts.com.au](http://www.qfeverfacts.com.au)

WAKE UP TO THE FACTS ON  
**Q FEVER**

Seqirus™ (Australia) Pty Ltd. ABN 66 120 398 067. 63 Poplar Road, Parkville Australia 3052. [www.seqirus.com.au](http://www.seqirus.com.au) Seqirus™ is a trademark of Seqirus UK Limited or its affiliates. Date of preparation Sep 2019. SEQ/QVAX/0819/0059

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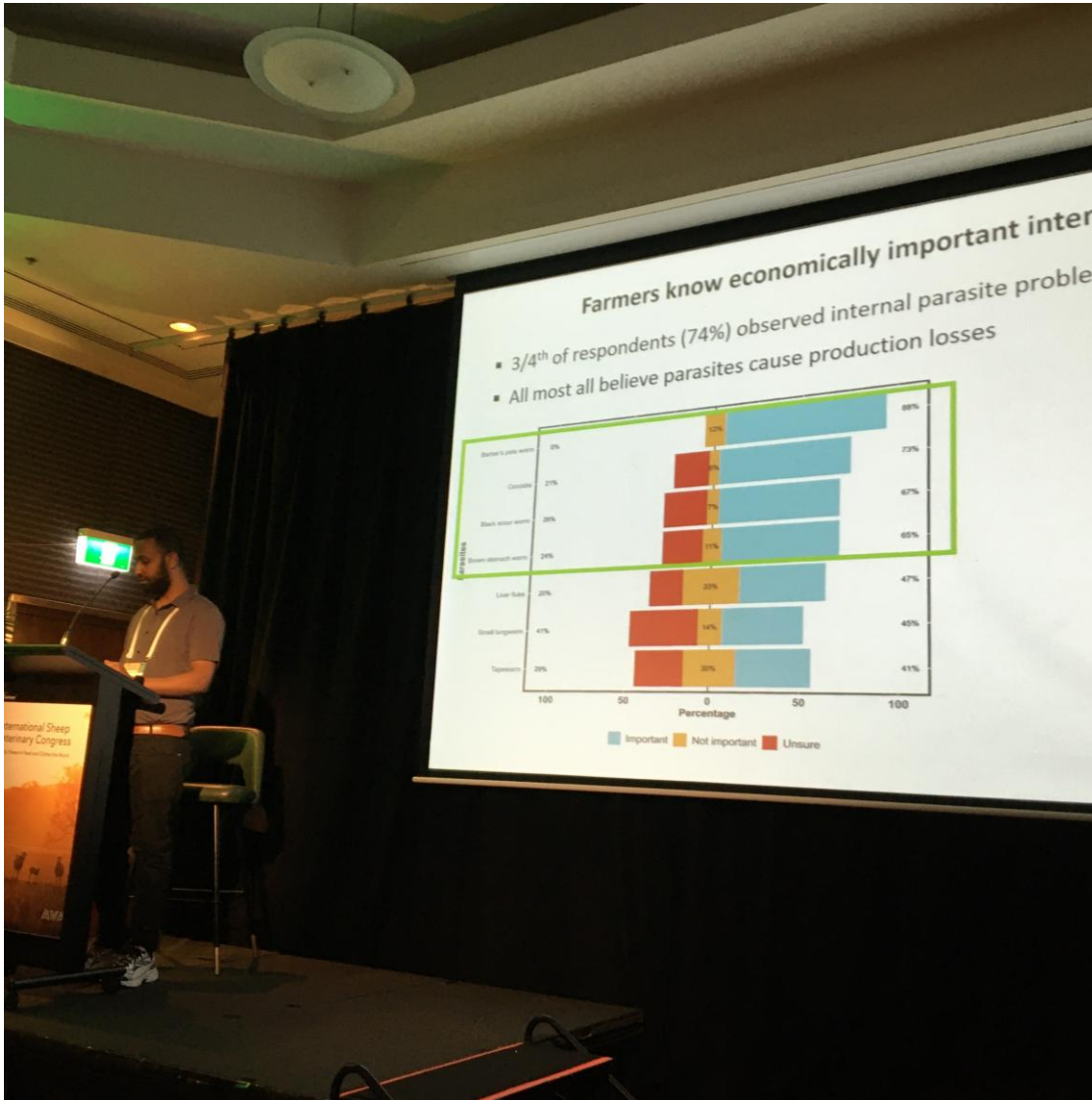
This ad is funded by the Australian Government Department of Health



# WORM CONTROL

Mostly sheep lectures but applicable to  
goats

# Dairy Goat Society Australia survey



74% said internal parasites were a problem & all believed internal parasites affected production

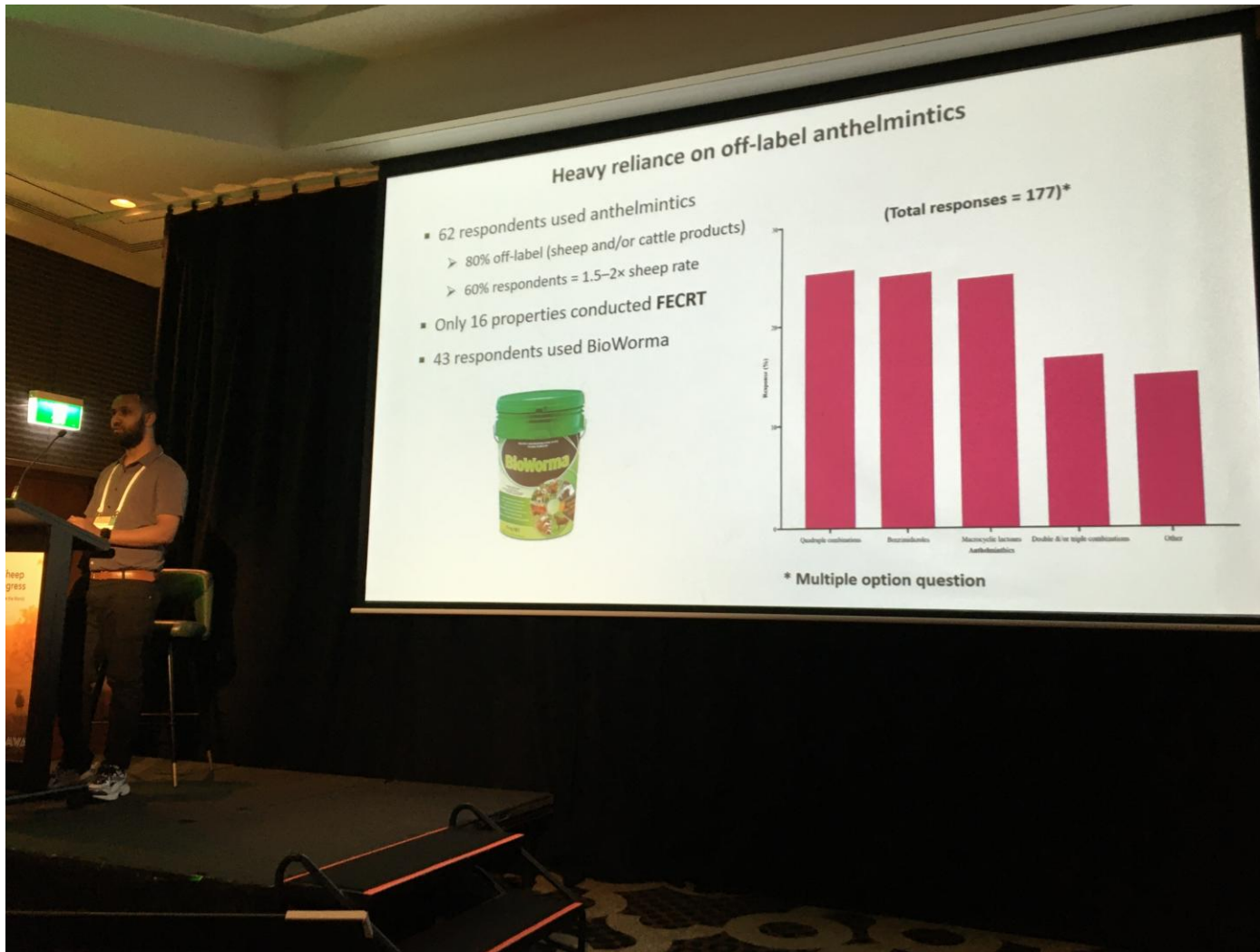
# Challenges



- Lack of info on goat dose rates
- Goats metabolise drenches differently
- Off label use
- Resistance and residue risks

# 43 were using BioWorma

# Only 16 had done a Faecal Egg Count Reduction Test



# Key findings/recommendations



- *Haemonchus contortus* or barber's pole worms are the main problem
- We need drenches registered for goats as 80% are using them anyway
- Monitor drench resistance
- Promote sustainable parasite control

**Results:** completed the online questionnaire, predominantly female owners managing medium/small herds in the southeastern states of Australia. Seventy-four percent (**49/66**) of respondents **observed gastrointestinal parasite-related illnesses in their goats** and **two-thirds assessed worm burden using faecal egg counts**. Nearly all (97%) acknowledged production losses caused by gastrointestinal parasites and ranked *Haemonchus contortus* as the most important internal parasite. The majority of respondents (94%) used anthelmintics, with **Q drench being the most commonly used anthelmintic**. WormBoss and veterinarians were the most trusted sources for advice on the use of anthelmintics. Targeted deworming was the most common strategy, though 77% had never tested the efficacy of anthelmintics. Multiple correspondence analyses delineated “good” and “poor” gastrointestinal parasite control practices.



## GLOBAL ISSUES – Anthelmintic usage and the drivers of change

- ▲ On farm productivity – remains an untapped opportunity
- ▲ Drench resistance – a growing global issue
- ▲ Supply chain (Supermarkets) influence
- ▲ Animal welfare – doing the right thing
- ▲ Greenhouse gas emissions – the impact of parasites
- ▲ Anthelmintics sales – restricted purchase legislation (SQP)
- ▲ Anthelmintic use – Government legislation
- ▲ Environmental - impact of anthelmintics
- ▲ TST & TT's – Targeted Selective Treatment and Targeted Treatment approaches

Preventative anthelmintic treatment programs

Stakeholders are now facing sustainability concerns related to this approach and are seeking future proofed solutions

# Anti-CarLA test Ontario Canada


**Who's got the goats?  
Canada's herd by the number**

Canada: Over 4500 goat farms, ~250,000 goats  
Ontario: 58.5% of Canadian goats  
Commodity: Meat, dairy, fibre

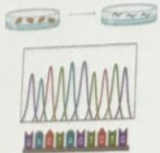



Stats Canada, 2024



## Study design: June – October 2023 and 2024



- 12 Ontario goat farms (2023), 11 farms (2024)
- Kids (< 1 year), yearlings (1-2 years), adults (>2 years) – 10 per age group
- On pasture as of June 1<sup>st</sup> each year



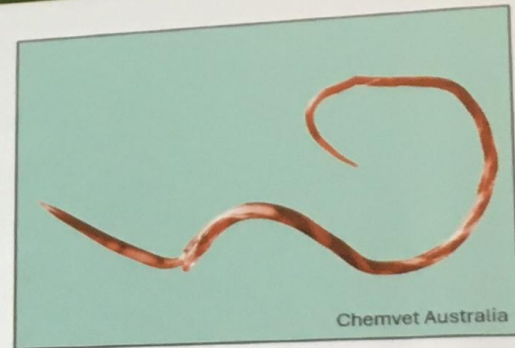
- Monthly sampling (T1-T4), June – October
- Individual fecal egg counts
  - Triple Chamber, Modified McMaster (8.33 eggs per gram)
- L<sub>1</sub> culture → ITS2 rDNA nemabiome sequencing



- End of grazing season saliva samples (T4)
- Anti-CarLA IgA antibody titre

## Gastrointestinal nematodes on Ontario goat farms

- GIN species prevalence (ITS2 rDNA Nemabiome):
  - *Haemonchus contortus* #1 (24 – 100%)
  - *Trichostrongylus colubriformis* #2 (26 – 71%)
  - *Teladorsagia circumcincta*, *Oseophagostomum venulosum*, *Trichostrongylus axei*, *Chabertia ovina* (< 10%) (C.Evered unpublished)



- **No anthelmintics approved for use in goats in Canada**
- Preliminary data (2022) indicate widespread benzimidazole (BZ) resistance on Ontario goat farms
  - *H. contortus* resistance to BZ on 17/17 farms
  - *T. colubriformis* resistance to BZ on 12/12 farms (O. Rucinkas unpublished)



# Anti-CarLA test works in sheep, but opposite in goats (in 1st year)

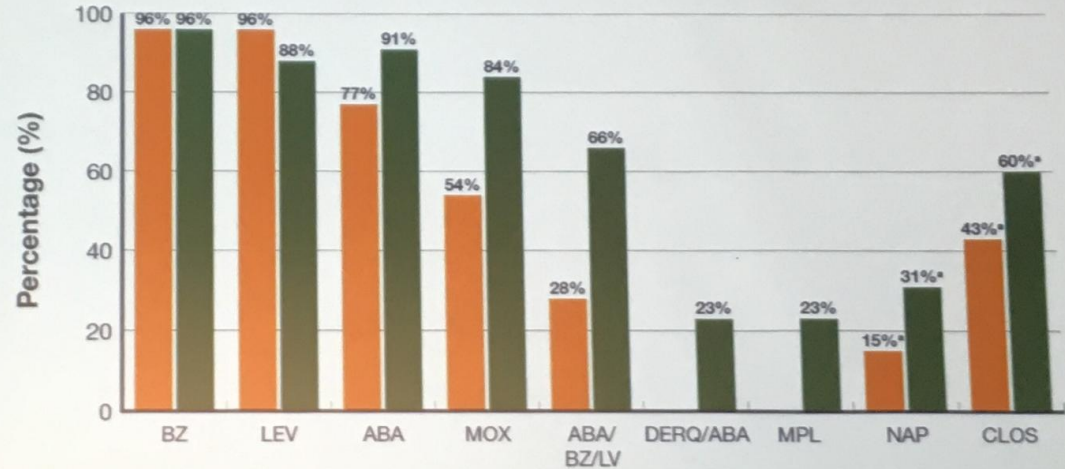
## Summary

1. Anti-CarLA IgA in the first grazing season is associated with significantly reduced fecal egg counts in the following grazing season in Ontario pastured sheep
2. Replacement ewes can be selected at the end of their first grazing based on CarLA medium or high levels to reduce FECs in their second season, with the intention of reducing exposure of their nursing lambs to parasites
3. Salivary anti-CarLA IgA response of the dam at the end of the first grazing season appears to predict lamb performance in the following grazing season



## Evidence suggests resistance has increased over past decade

Comparison of results of national survey (2009-12)<sup>#</sup> and Elanco DrenchTest (FECRT) program (2021-24).



<sup>#</sup>Playford, M.C. et al. (2014). Prevalence and severity of anthelmintic resistance in ovine gastrointestinal nematodes in Australia (2009-2012). *Aust Vet J.* 92: 464-471. <sup>\*</sup>*Haemonchus* only.

■ National Survey (2009-12) ■ Elanco (2021-24)

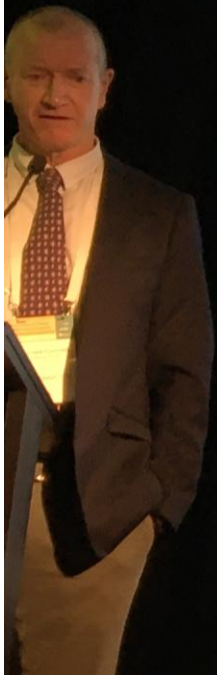


## Resistance prevalence for different species

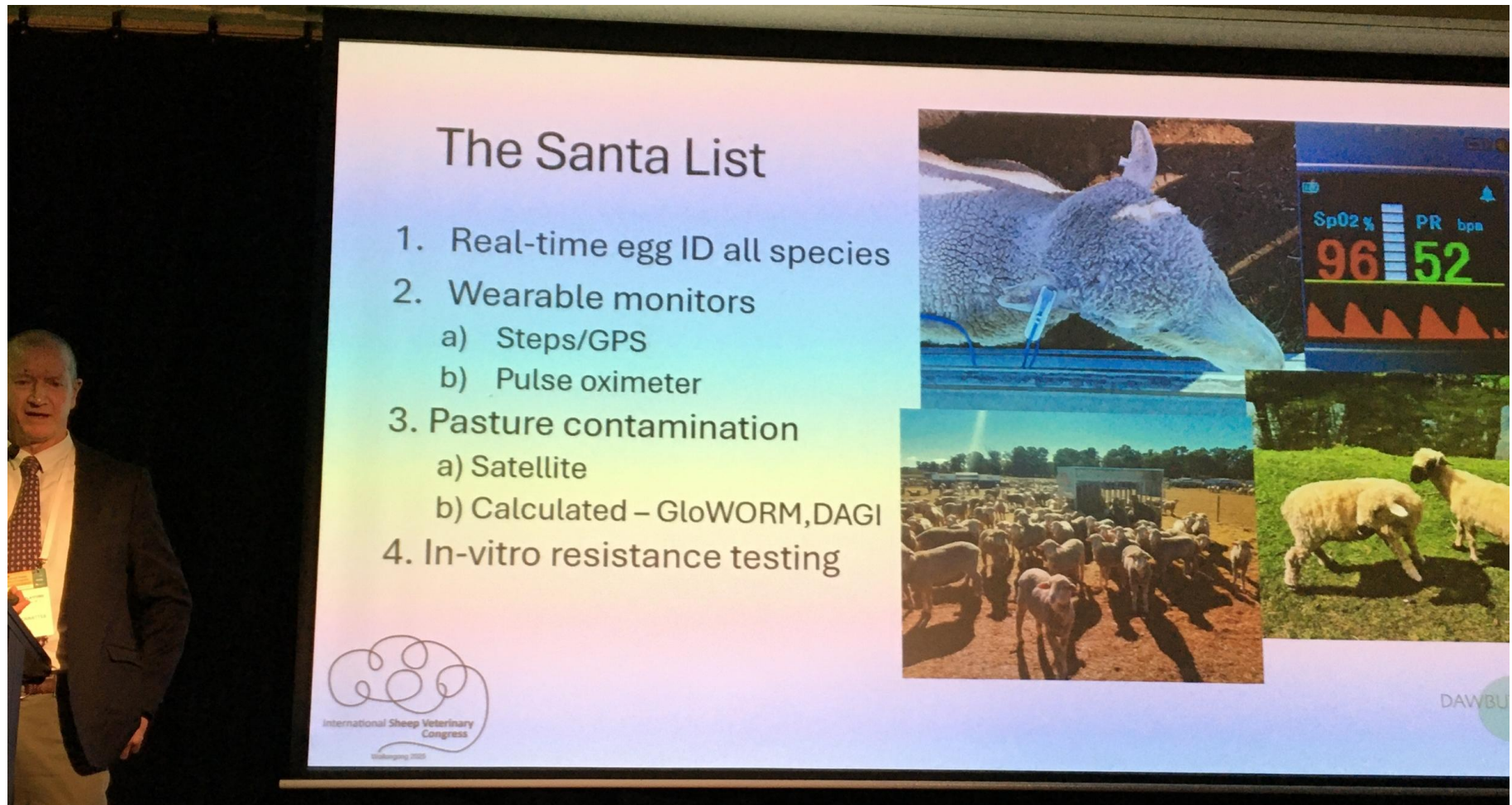
ACTIVES	HAEM	TELA	TRICH
BENZIMIDAZOLES	X	X	X
LEVAMISOLE	✓	X	X
ABAMECTIN	X	X	✓
MOXIDECTIN	X	X	✓
BZ-LV-ABA	✓	X	✓
MONEPANTEL	✓	✓	✓
DERQUANTEL-ABA	✓	✓	✓
<i>Haemonchus</i> only			
NAPHTHALOPHOS	✓	-	-
CLOSANTEL	X	-	-

Prevalence >50% = X

	Good >95%		
	OK 90-94%		
	Marginal		
	Poor		
	Bad		
	<i>Haemonchus</i> Barber's Pole	<i>Teladorsagia</i> Brown stomach	<i>Trichostrongylus</i> Black scour
Abamectin			
Moxidectin			
Levamisole			
White / Albendazole			
Triple / Q-drench			
Zolvix			
Startect			
Closantel		NA	NA



# Research needs for sheep worms



**The Santa List**

1. Real-time egg ID all species
2. Wearable monitors
  - a) Steps/GPS
  - b) Pulse oximeter
3. Pasture contamination
  - a) Satellite
  - b) Calculated – GloWORM, DAGI
4. In-vitro resistance testing

International Sheep Veterinary Congress  
Wellington 2015

DAWBU



# What exciting things are in the pipeline

Or available now overseas

# Working on AI ID of worm eggs



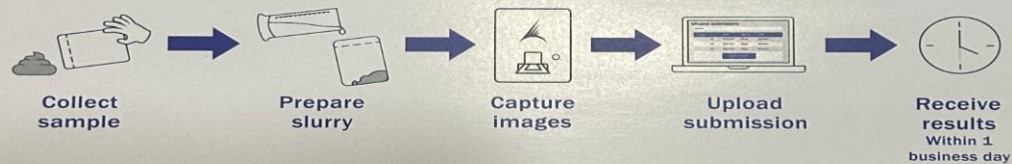
# WORM ID

**TRADITIONALLY**, farmers have relied on larval cultures to identify which parasite species are present on farm, a slow, labour-intensive process that takes 10–14 days, requires a trained parasitologist, and often fails due to poor egg hatching or suboptimal storage conditions.

**In an industry where parasite resistance is increasing and every day counts, waiting two weeks for results isn't good enough.**

**INTRODUCING EGG ID** A breakthrough innovation that identifies sheep parasite species to the genus level by analysing the shape, size, and structure of eggs. This world-first test replaces traditional larval cultures by using the FECPAK Micro-I 300 to capture images and apply egg morphology for genus identification. It delivers Worm ID results with over 90% accuracy within 1 business day.

## HOW IT WORKS



- **Target treatment:** Know which parasites are present so you can provide appropriate treatment and parasite management advice
- **Save clients' money:** By using the right treatment at the right time
- **Manage resistance:** Informed decisions reduce resistance pressure and prolong drench efficacy
- **Fast turnaround:** Respond quickly with results within 1 business day. Don't wait 10-14 days
- **Maximise animal performance:** Healthier animals maximise on farm profitability

Need more information?  
Contact the helpful FECPAK team at:  
1800 573 247  
hello@fecpak.com



# Accelerating Sheep Roundworm Diagnosis: Image-Based Morphological Identification of Strongyle Eggs as a Fast, Scalable Alternative to Larval Culture

International Sheep Veterinary Congress  
30th-31st of October 2023

Anirreda Zarekarta<sup>1</sup>, Hannah Mitchell<sup>1</sup>, Stacey McGregor<sup>1</sup>, Hannah Neville<sup>1</sup>, Greg Mirams<sup>1</sup>

<sup>1</sup>Techion Group Ltd

## Introduction

Accurate parasite identification is essential for effective animal health management<sup>(1)</sup>. The current standard for parasite identification involves larval culture (LC) followed by expert parasitologist analysis. Larval culturing is often associated with several limitations, such as a 7–14 day cultivation time, variable rates of hatch success, inequality of L3 development in each genus, and a shortage of trained parasitologists. These issues often lead to delays in diagnosis, compromised parasite control strategies, and inaccurate or incomplete data when cultures fail<sup>(2)</sup>.

To overcome these constraints, Techion has developed a new image-based diagnostic method that identifies strongyle eggs to the genus level based on their size and morphological features (Fig. 1). This new system has been named **Egg Genus Identification**. Genera identified using this method are *Haemonchus*, *Trichostrongylus*, *Ostertagia/Teladorsagia*, *Cooperia*, and *Oesophagostomum/Chabertia*. *Oesophagostomum* and *Chabertia* are grouped as they are difficult to distinguish in both the egg and L3 larvae stages<sup>(3)</sup>.

- White, Pflandler
- Length: 62.50 µm; Width: 40.00 µm
- 16 micrometres
- 16 micrometres
- White oval egg with large teliochore
- Spin on low speed manual pump
- Spin: Elliptical
- Length: 60.25 µm; Width: 35.44 µm
- 12 micrometres, hard to photograph
- Nearly spherical small poles
- Flattened, pointed ends

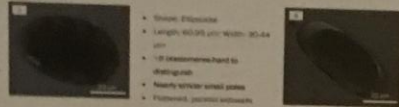


Figure 1: Distinct characteristics of different strongyle eggs: (A) *Haemonchus* and (B) *Chabertia*.



Figure 2: Micro-I 300 device

Using a morphology-based approach offers a faster turnaround, improved reliability, removes larvae development inequality, and reduces dependence on parasitologist expertise.

This method uses the newly developed Micro-I 300 imaging system, created by Techion, to capture high-resolution images directly from faecal samples (Fig. 2).

Ultimately, Egg Genus Identification enables quicker and more accurate parasite diagnostics, enhancing decision-making and improving animal health outcomes in livestock systems.

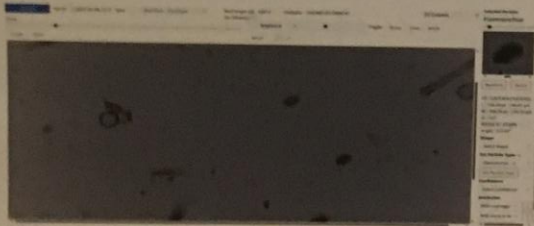


Figure 3: Measurement software measures egg size, shape, and morphology

Egg Genus Identification is performed using a bespoke cloud-based software developed by Techion (Fig. 3). It allows the measurement and evaluation of morphological attributes of eggs and classification using specially developed decision trees, enabling automated genus-level identification from high-resolution images.

## Methods

Sheep faecal samples ( $n = 27$ ) were prepared following the method described by Francis & Šlapeta (2022), adapted from the FECPAK protocol<sup>(4)</sup> (Fig. 4). Eggs were isolated using Techion's patented particle accumulation technology and then concentrated onto a cover slip via flotation for image capture. High-resolution images were taken using Techion's Micro-I 300 imaging platform. Morphological attributes (width, length, shape, and internal structures) were extracted by custom measurement software to classify the genus. Results were compared to LC outcomes using both percentage percentage and predominant classification, with 1 being the most prevalent genus and 5 the least prevalent.



Figure 4: Faecal sample via isolation and concentration to a cover slip for image capture

**Acknowledgments**  
to our team: Maria Corbridge, Gemma Macgregor

## References

1. O'Connell, J. L., & O'Connell, J. L. (2020). The epidemiology of nematode infections in sheep. *Journal of Parasitology*, 110(2), 1-10.
2. O'Connell, J. L., & O'Connell, J. L. (2020). The epidemiology of nematode infections in sheep. *Journal of Parasitology*, 110(2), 1-10.
3. O'Connell, J. L., & O'Connell, J. L. (2020). The epidemiology of nematode infections in sheep. *Journal of Parasitology*, 110(2), 1-10.
4. Francis, J. A., & Šlapeta, J. (2022). A new diagnostic approach for fast and accurate identification of gastrointestinal nematode infections from faecal FECPAK egg identification using machine learning for percentage, 1000, 1000.

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## Results

A strong positive correlation was observed between LC and Egg Genus Identification methods across all major nematodes. Correlation coefficients for percentage data ranged from 0.66 to 0.88, with *Haemonchus* ( $r = 0.88$ ), *Cooperia* ( $r = 0.85$ ), *Oesophagostomum/Chabertia* ( $r = 0.78$ ), *Trichostrongylus* ( $r = 0.70$ ) and *Ostertagia/Teladorsagia* ( $r = 0.66$ ) showing varying levels of agreement (Fig. 5). Rank-based correlations followed similar patterns, with *Haemonchus* ( $r = 0.87$ ), *Cooperia* ( $r = 0.76$ ), *Ostertagia/Teladorsagia* ( $r = 0.75$ ), *Oesophagostomum/Chabertia* ( $r = 0.72$ ) and *Trichostrongylus* ( $r = 0.68$ ) demonstrating consistent alignment.

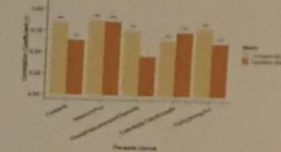


Figure 5: Correlation between LC and image based Egg Genus Identification methods across five genera; all correlations significant ( $p < 0.05$ ).

All correlations were statistically significant ( $p < 0.05$ ), supporting the robustness and consistency of morphology-based Egg Genus Identification as a reliable alternative to LC for parasite egg identification (Fig. 5).

Heat maps show consistent detection patterns between LC and Egg Genus Identification methods, with variable concordance in percentages, with the highest alignment observed for *Haemonchus*, *Ostertagia/Teladorsagia*, and *Trichostrongylus* (Fig. 6).

Rank-based analysis showed consistently strong agreement across all genera, underscoring the reliability of the Egg Genus Identification method (Fig. 7).

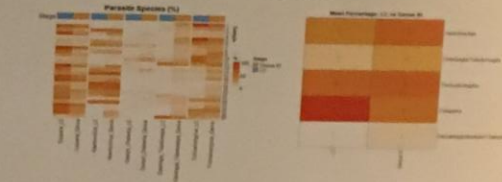


Figure 6: Heatmaps of Parasite Percentages. A) LC and Egg Genus Identification (Genus %). Percentages for all 27 samples across the parasite genera. B) Mean percentage values per genus, highlighting each method.

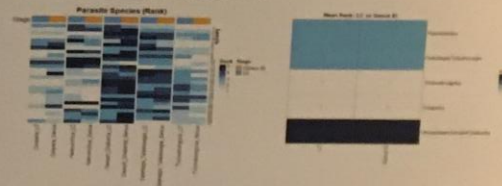


Figure 7: Heatmaps of Parasite Ranks. A) LC and Egg Genus Identification (Genus %). Rank-based detection (1 = most prevalent, 5 = least prevalent) for each genus in 27 samples. B) Mean rank scores highlighting method agreement to genus.

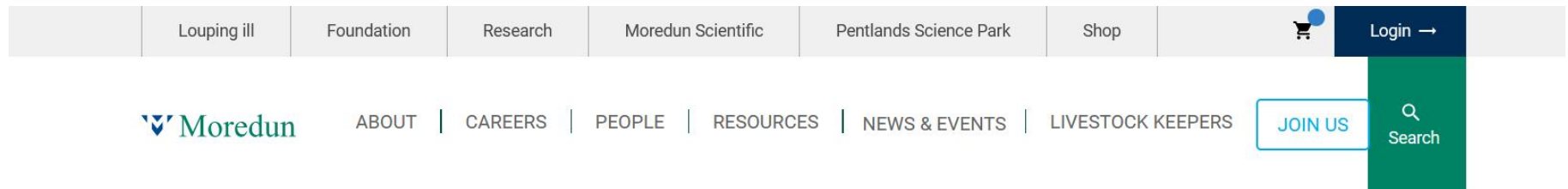
## Conclusion

Strong positive correlations between LC and image based Egg Genus Identification confirm the robustness of this new diagnostic tool. This morphology-driven method offers a faster, field-deployable alternative for parasite identification in sheep, supporting timely, accurate, and informed treatment decisions.

## Next Steps

- PCR Validation:** We are conducting PCR-based parasite identification to molecularly validate and cross-check findings from LC and Egg Genus Identification.
- Commercial Delivery:** We are preparing for delivery of a robust, field applicable diagnostic solution based on results from ongoing validation.
- Cattle Parasite Genus Identification:** Development is underway to extend the platform's capabilities to include genus identification of strongyle eggs in cattle.
- AI Model Development:** We are preparing the final stages for AI model development, to allow for the automated identification and classification of eggs.

# Moredun working on vaccines for *Trichostrongylus* and *Teladorsgia* worms



The screenshot shows the top navigation bar of the Moredun website. It features a horizontal menu with the following items: Louping ill, Foundation, Research, Moredun Scientific, Pentlands Science Park, Shop, and a shopping cart icon. To the right of the shopping cart is a dark blue button labeled 'Login →'. Below this bar is a secondary navigation bar with the Moredun logo on the left, followed by links for ABOUT, CAREERS, PEOPLE, RESOURCES, NEWS & EVENTS, and LIVESTOCK KEEPERS. A 'JOIN US' button is positioned to the right of these links. On the far right, there is a green vertical bar containing a search icon and the text 'Search'.

## Cutting-Edge Research

### Science Shaped by Farmers

Moredun advances livestock health through innovative research tackling infectious diseases and developing practical prevention strategies. Working with the farming community, we reduce disease impact while addressing climate change, biodiversity loss, and food security.

Research that delivers, from lab to field.

# Elastrator rings coated with local anaesthetic

v1 Rev 01/25

**lidoband™** solvet

LOT#LUS000000075  
EXP:MR27



**Step 1.** Puncture the blister surface with the band applicator.

**Step 2.** Remove the band from packaging while loaded on the prongs of the applicator.

**Step 3.** Squeeze the applicator handle to spread the band.

**Step 4.** Pull the testicles into the scrotum, place the band above the testicles, and remove the applicator.

**Description:** Lidoband™ is a latex rubber band designed to be placed around the base of the scrotum of calves and lambs for castration. Each castration band is infused with 80 mg of lidocaine, which provides local anesthesia beginning at 2 hours post-application and lasting up to 42 days.

**Directions for use:** Each band is individually packaged in a foil-sealed blister. Do not touch the band with bare fingers. Wear gloves when applying Lidoband. Only apply Lidoband with a commercial band applicator (not included).

**Precautions:** Lidocaine is typically well tolerated. As with all local anesthetics, untoward effects may occur due to hypersensitivity.

Lidoband should not be used on animals with a known lidocaine hypersensitivity.

**User Safety:** If skin comes in contact with Lidoband, wash affected area immediately with soap and water.

**Storage:** Keep stored in a cool, dry place.

Do not re-use the band.

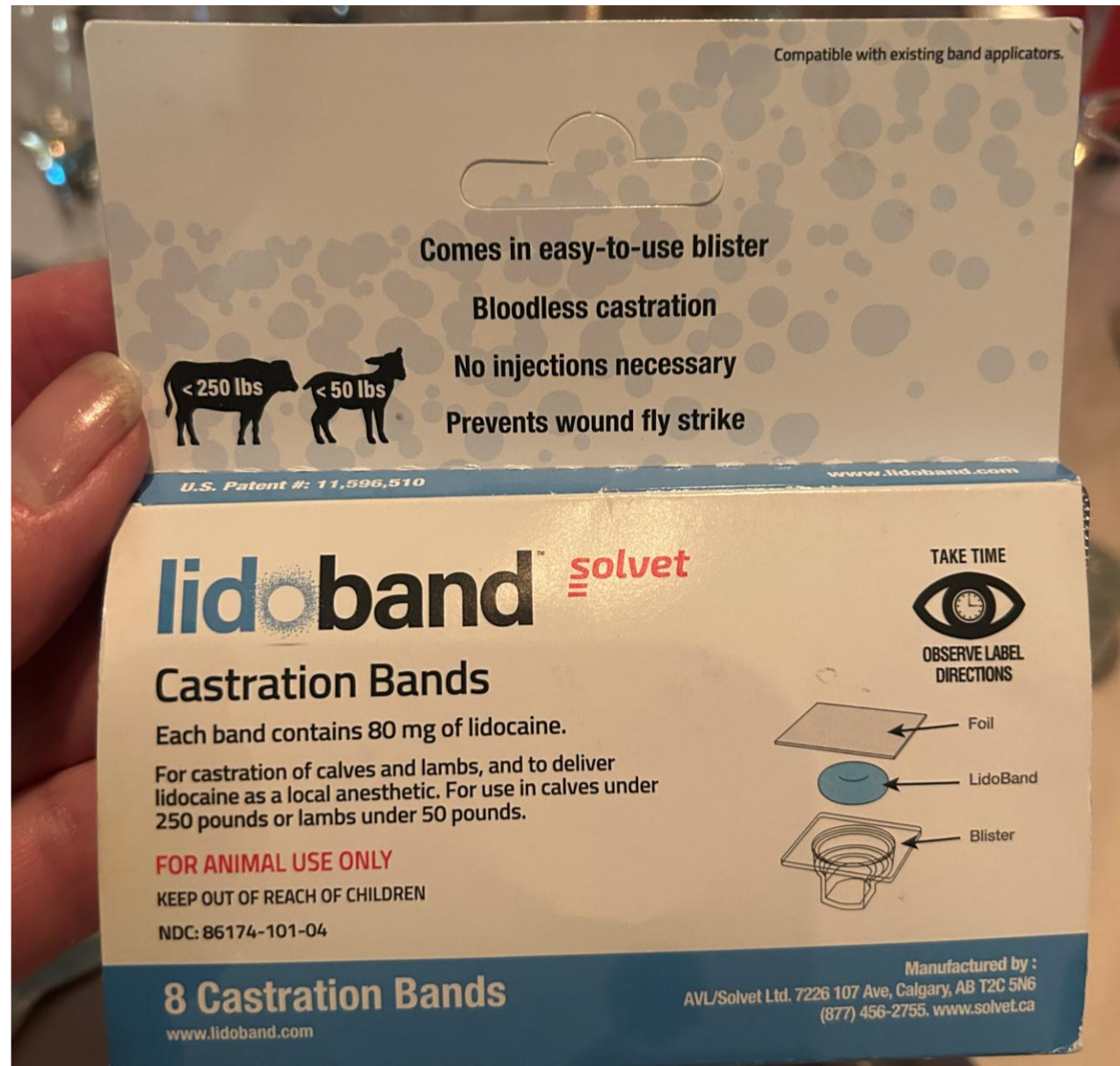
[www.lidoband.com](http://www.lidoband.com)

California requires:  
**WARNING: Cancer Risk**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

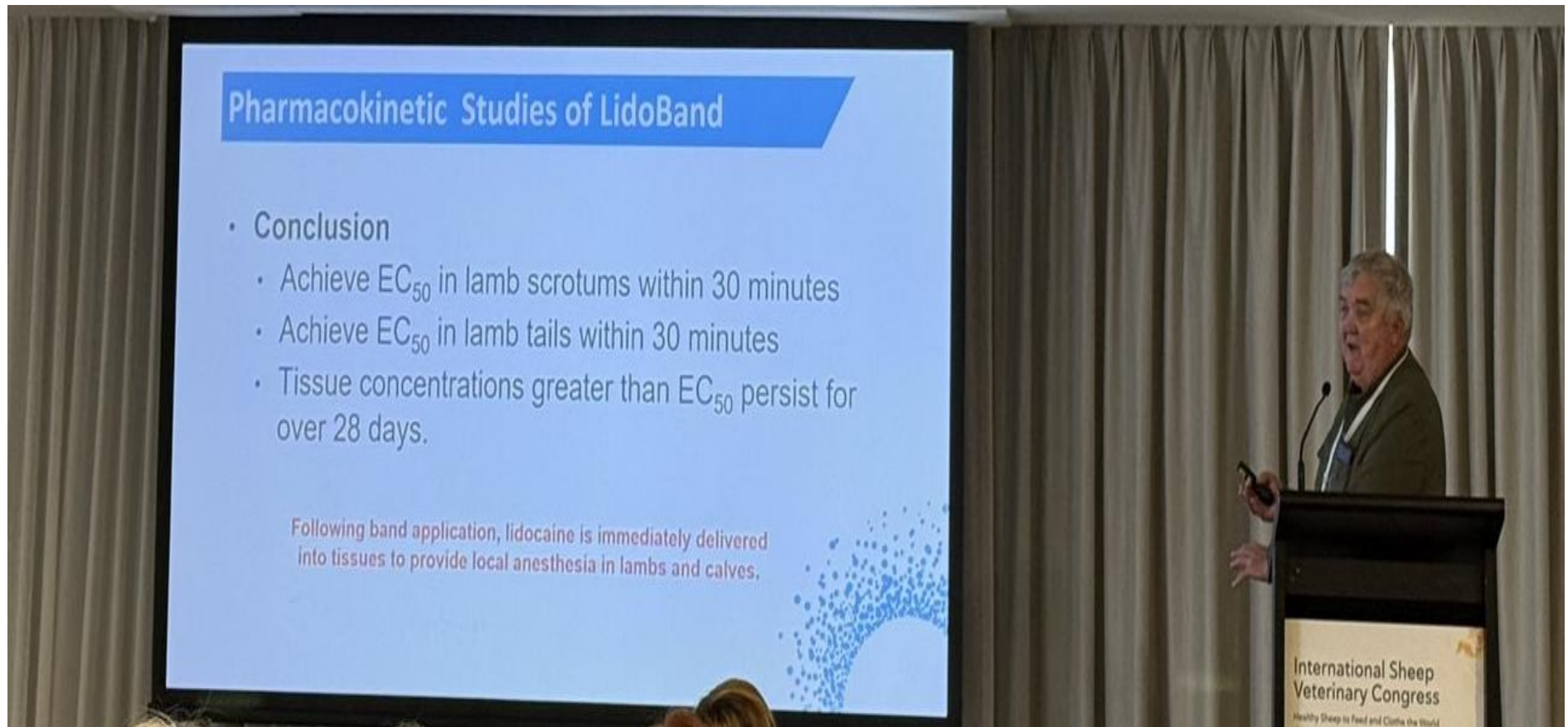


6 28224 50192 1

# Lidoband in blister packs ready to use



# LidoBand but takes 20-30 mins to work



**Pharmacokinetic Studies of LidoBand**

- Conclusion
  - Achieve  $EC_{50}$  in lamb scrotums within 30 minutes
  - Achieve  $EC_{50}$  in lamb tails within 30 minutes
  - Tissue concentrations greater than  $EC_{50}$  persist for over 28 days.

Following band application, lidocaine is immediately delivered into tissues to provide local anesthesia in lambs and calves.

International Sheep Veterinary Congress  
Healthy Sheep to Feed and Clothe the World

# Preventing sheep pneumonia

## CURRENT PREVENTION AND TREATMENT STRATEGIES IN AUSTRALIA

### MANAGEMENT

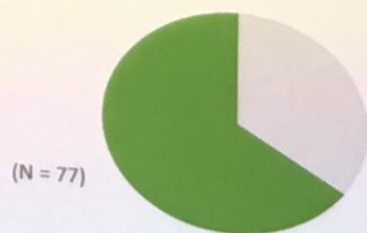
- Adequate nutrition for all classes of stock
- Worm control
- Coccidia control
- Avoid acidosis with proper concentrate inductions
- Good feedlot management
- Reduce risk of heat stress → Adequate shelter
- Practice low stress weaning protocols

### ANTIBIOTICS

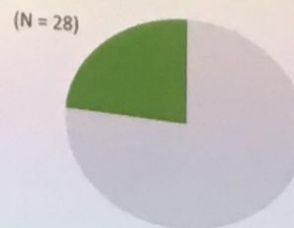
- Often relied upon heavily in the face of an outbreak or for preventative use.
- Should not replace good management.
- Disadvantages: **AMR** development with metaphylaxis and frequent use, meat WHP, farm schemes,

# Microbial Detections

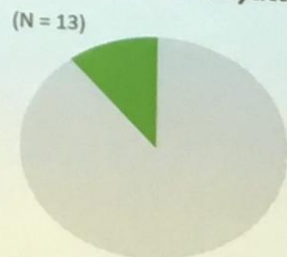
*Mycoplasma ovipneumoniae*: 65.3%



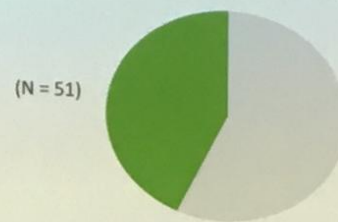
*Pasteurella multocida*: 23.7%



*Mannheimia haemolytica*: 11.0%



Concurrent infections: 43.2%



Including  
*Trueperella pyogenes*  
*Bibersteinia trehalosi*

# Conclusions

- \* Mycoplasma infection in lambs frequently associated with:
  - > pneumonia,
  - > rectal prolapse,
  - > mixed infections,
  - > sudden death

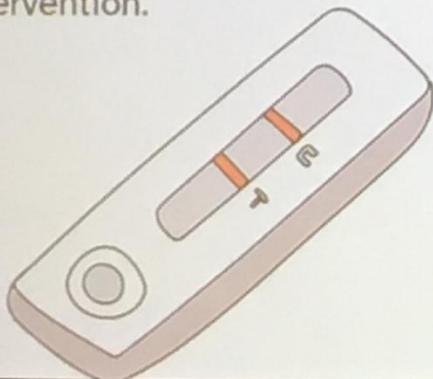
- \* Especially high prevalence in feedlots
- \* Significant opportunity for vaccine development

Interest in a sheep mycoplasma vaccine

# PNEUMONIA RAPID IN FIELD TEST

## Why Develop a Rapid In-Field Test for Sheep Pneumonia?

- 🔍 Diagnostic Gaps
  - Current lab diagnostics are slow and often miss fastidious pathogens like *M. ovipneumoniae* (MOP).
  - Culture success is low → limiting diagnostic value and delaying intervention.



### 🔬 What We Found

- *M. ovipneumoniae* detected in 61% of pneumonia cases
- In 38.9% of PCR-positive cases, it was the sole pathogen
- Field evidence points to a significant but underdiagnosed role in respiratory disease

### ✅ Our Solution: A Rapid Lateral Flow Assay (LFA)

- Detect *M. ovipneumoniae* in minutes from nasal or lung swabs
- Enable real-time flock-level decision-making

### BROADER BENEFITS

- Supports targeted treatment and reduces unnecessary antimicrobial use
- Facilitates vaccine development
- Enables research into:
  - Carrier state dynamics → which animals harbor infection?
  - Can shedding be reversed with treatment or management changes?



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# Umbirez NBS

**Methods:** NBS was used alternately with strong iodine solution on the navel and ear tag sites of **6840 lambs** born to eleven UK commercial sheep flocks, that lambed indoors in 2024 and where data recording was already routine on farm.

**Outcome: Mortality up to 56 days** old differed significantly ( $X^2=8.24$ ;  $p = 0.004$ ) between NBS lambs (6.5%) and iodine lambs (8.3%) with an especially marked difference in survival rate over the first four days of life. Mortality ratio was 1:1.28. Of the lambs that survived and were weighed both at birth and at approximately 56 days ( $n = 3385$ ), the **daily weight gain** differed significantly ( $p = 0.02$ ) with a weight difference at 56 days of 0.36 kg in favour of NBS. For 517 pairs of twin lambs, linear regression indicated a weight difference of 0.49kg in favour of the NBS lambs ( $p = 0.008$ ). Mortality in the lambs with **dipped navels** was significantly lower than those with sprayed navels ( $p = 0.017$ ).

**Conclusion: Optimal navel and ear tag site applications during lambing efficiently protects against neonatal deaths. NBS is superior to strong iodine and dipping outperforms spraying.**

# Dip don't spray

Note NoBACZ Navel is retailed as UMBIREZ™ in all countries outside of the UK & Ireland.



# Goats 101 for veterinarians

Sandra A Baxendell, goatvetoz



**Background:** Many goat owners have trouble accessing veterinary help for their goats as their local vets only see dogs and cats. This is becoming a serious animal welfare issue, especially as miniature breed goats are becoming popular in semi-urban areas.

**Objectives:** The aim is to provide basic information to small animal veterinarians to encourage them to provide care for the goats in their communities. Veterinarians have many transferrable skills that just need some slight adjustments to successfully treat goats.

3 videos of my talk (which was in 3 parts) are on here

<https://goatveto.com.au/conference>





# Goats 101

Sandra A Baxendell  
Goat Veterinary Consultancies- goatvetoz



## Introduction

Many goat owners have trouble accessing veterinary help for their goats as their local veterinarians only see dogs and cats. This is becoming a serious animal welfare issue, especially as miniature breed goats are becoming popular in semi-urban areas. With some basic information, veterinary medicines and tools, small animal veterinarians can provide care for the goats in their communities. This will cost less than \$1000. Veterinarians have many transferrable skills that just need some slight adjustments to successfully treat goats.

## Basic Extra Tools

Single dose drench guns – costs around \$20-30  
Bathroom scales, tape measure and cm to kg chart  
Foot trimmers e.g. rose trimmers from Bunnings  
Stomach tubes for adults and kids  
Lambing tool or soft ropes  
FAMACHA® card  
Quick release collar & strong lead  
Embryotomy wire  
McMasters Egg Counting Chamber



Stomach tube –Adult above kid on right



Lambing tool on left, feet trimmers on above



The chart converting cm to kg is on [www.goatvetoz.com.au/worms](http://www.goatvetoz.com.au/worms)

## Basic Extra Medicines

Combination sheep worm drench for non-milking goats e.g. 1 L of Qdrench and a drench for milking goats e.g. a white drench e.g. 250 ml Worma Drench® &/or 1L Kilverm (levamisole)  
Copper Oxide Wire Particle boluses for *Haemonchus* control with Panacur or copper deficiency  
Meloxicam (can use dog meloxicam)  
Sulpha injectable antibiotic or Toltrazuril e.g. Baycox  
Bottle of Oxytetracycline  
Prostaglandin  
Xylazine 20  
Obstetrical lubricant (KY jelly will work)  
Vaccine best for district e.g. Glanvac 3 or 6



Copper Oxide Wire Particle boluses .



Glanvac® clostridial vaccine

## Basic Goat Information

Rectal temperature is 39.5 degrees C plus or minus 0.5.  
Normal respiratory rate is 10-30 per minute  
Normal pulse is 70-95 per minute  
Goats metabolise veterinary medicines more rapidly than sheep or small animals so need higher dose rates or more frequent dosing.  
Anthelmintics need to be given at higher doses rates than the sheep label instructions. i.e. double for benzimidazoles and monepantel and 1.5 times for levamisole. Qdrench is therefore 1.5 times as it contains levamisole.  
Goats need vaccination more frequently than sheep – a minimum of every 6 months, more often if fed a lot of grain.  
Goats do best with the minimum number of vaccines needed so use Glanvac 3® rather than Glanvac 6®, unless cases of the other clostridial diseases are likely. This will also reduce the size of the vaccine reactions; often large in goats.

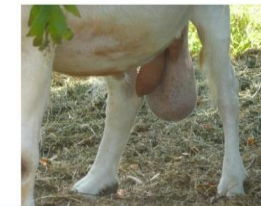
## Normal goats – no treatment needed



Enlarged thymus gland in well grown kids or "milk goitre"



Dairy breed unmated kids with well developed udders – leave alone unless dripping milk & only then milk daily



Dairy breed buck producing milk – he is still fertile

## Contact

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SMART OWNERS, HEALTHY GOATS

## POWERPOINTS USED AT THE CONFERENCE

These PowerPoints may change before the ISV Conference

Questions about goats (pdf)	<a href="#">Download</a>
Goats 101 (pdf)	<a href="#">Download</a>

## DOWNLOADS

Resources used for the International Sheep Vets Conference 2025

Rapid Mastitis Test recipe (docx)	<a href="#">Download</a>
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## What do small animal vets need to treat goats

Goat owners often have difficulty in finding a vet that will see their goats

## What is normal for goats

This video discusses what is normal for goats and how they differ from sheep & cattle.



https://onlinelibrary.wiley.com/toc/17510813/2025/103/S1



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# International Sheep Vet Conference Questions ?



Not Used

**Table 1:** The key differentials, associated clinical features, and the rationale for ruling in or excluding each condition.

Clinical sign/history	Possible differential diagnoses	Reason ruled in/out
High fever, nasal discharge, oral necrotic ulcers	PPR, FMD, Bluetongue, Orf	PPR supported by necrotizing stomatitis and rapid systemic spread; FMD unlikely due to absence of foot/teat lesions; bluetongue unlikely due to no tongue cyanosis or insect vector exposure; orf ruled out as lesions were ulcerative, not proliferative.
Profuse foul-smelling diarrhea	PPR, Salmonellosis, Coccidiosis, Parasitism	PPR likely with concurrent mucosal lesions and systemic illness; coccidiosis and parasitism less likely due to sudden onset and severe mucosal necrosis.
Tachypnea, mild respiratory signs	PPR, CCPP, Pasteurellosis	CCPP unlikely due to absence of pleuritic pain, fibrinous pleural exudate, and herd outbreak signs.
Rapid progression in unvaccinated goat	PPR, Salmonellosis, FMD	PPR favored as unvaccinated herd member and classic disease course; FMD not supported by lesion pattern or spread to other animals.
Lymphadenopathy	PPR, Systemic bacterial infection	PPR most consistent due to concurrent viral stomatitis and systemic signs.

FMD: Foot-and-mouth disease, PPR: Peste des petits ruminants, CCPP: Contagious caprine pleuropneumonia

# Effects of castration and rearing method on weight gain of dairy goat kids



**Buck smell**

**Buck smell is relevant for the marketing of meat**

The studies only determined the weight differences between the various groups. According to these findings, castration does not offer any advantages for male kids of dairy goats.

However, it was not taken into account that when fattening beyond sexual maturity, a buck smell is still detectable after slaughter, especially in the fat. Some German customers find this unpleasant, so avoiding the buck smell is a decisive factor for some fatteners.

Immunocastration did not result in a significant reduction in buck smell in this regard. Further targeted studies would be necessary here.

Murata et al. (2014): Identification of an Olfactory Signal Molecule that Activates the Central Regulator of Reproduction in Goats. *Current Biology* 2014,24:681-86.

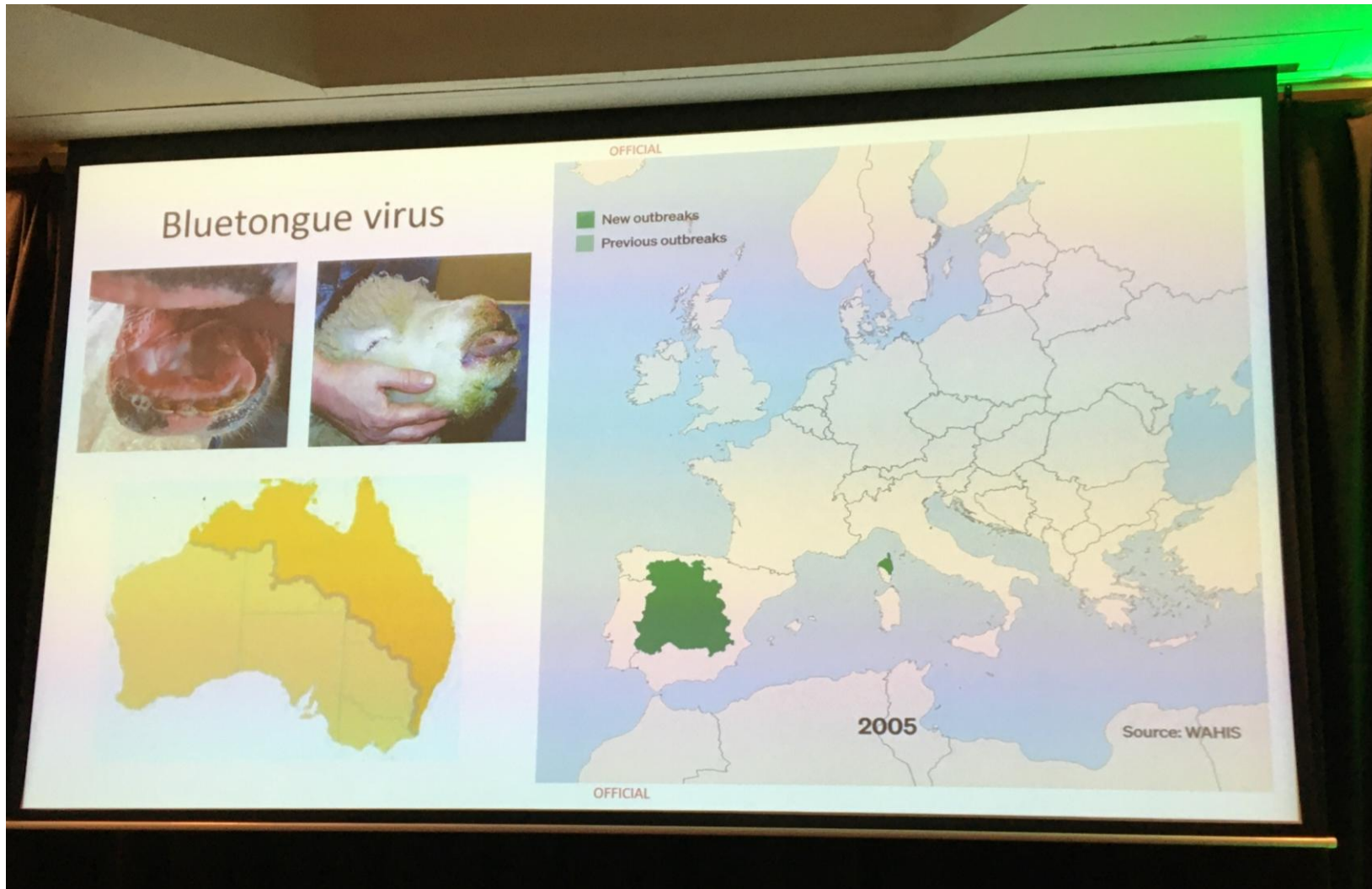
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AWA

**Methods:** In 2023, 100 kids were castrated with Burdizzo forceps under general and local anaesthesia or left entire (not castrated). All 100 kids were reared on extensive pasture. In 2024, the weight development of 100 male kids was tracked. 22 died mainly after weaning due to clostridiosis. 34 kids were reared indoor and 33 on pasture. 36 kids were castrated using Burdizzo forceps and 31 were immunised against GnRH by Improvac®. Nine kids remained uncastrated.

**Results:** In 2023 weight gain of both groups was in parallel and did not differ significantly at any time. Uncastrated animals tended to be heavier than the castrated kids. A group of 9 uncastrated animals reared indoor had the highest weight at slaughter with 39.8 kg. In 2024, the three groups did not have significantly different weights at the end of the fattening period (uncastrated  $32.8 \pm 3.8$  kg; Burdizzo  $29.4 \pm 4.1$  kg; Improvac®  $29.0 \pm 4.5$  kg). The uncastrated bucks raised indoor were the heaviest, the Improvac® vaccinated kids raised on pasture were the lightest.

# Bluetongue spreading in Europe



**Introduction**

- Previous investigation by Japanese researchers linked *Strongyloides papillosus* hyperinfection to sudden death in weaned calves and lambs, and suggested sudden death is secondary to fatal arrhythmias, often without significant post-mortem findings.
- The New York AHDC at Cornell confirmed two outbreaks of sudden death in apparently healthy weaned dairy calves in New York associated with *S. papillosus* in 2018 and 2019.
- Similarities between outbreaks included:
  - Sawdust bedding
  - High environmental temperature and humidity
  - Precocious udder development characterized by ductal hyperplasia, congestion and hemorrhage
  - histological findings were unremarkable necropsy findings
  - High prevalence of *S. papillosus* positive fecal samples in affected groups
  - Outbreaks ceased within 24 hours of treatment with doramectin pour-on
- *S. papillosus* is known to cause clinical signs of ill thrift and diarrhea in young ruminants, but these were the first reports in the United States describing an association with sudden death of weaned calves raised in confinement housing.

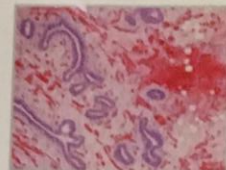
**Abnormal Udder Enlargement in NY Outbreak Calves**



Enlarged precocious udder of 3mo old calf infected with *S. papillosus*

Normal udder of 3mo old calf

Mammary gland ductal hyperplasia, congestion and hemorrhage seen histologically (right)



Gross congestion and hemorrhage within mammary gland of *S. papillosus*-infected calf (right)



**Objective**

To further investigate the occurrence of bovine and ovine sudden death associated with *S. papillosus* in the United States.

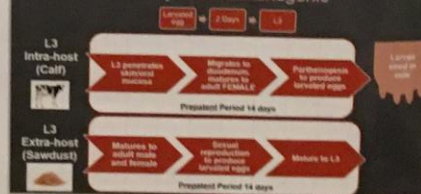
**Results**

- 10 cases met the inclusion criteria (n=2 bovine; n=8 ovine)
- 2008 (n=1), 2012 (n=2), 2018 (n=1), 2019 (n=1)
- 5/10 cases had open post-mortem diagnoses and clinical presentations similar to those previously described in Japanese *S. papillosus* outbreaks (n=3 lambs; n=2 calves)
  - Juveniles 2-8m old
  - Time of year: August (n=1), October (n=4)
  - *S. papillosus* fecal egg counts ranging from 3,100 to 29,000 eggs per gram of feces (epg)
  - Location: New York state (n=4) and Massachusetts (n=1)
- 5/10 cases had definitive post-mortem diagnoses
  - Bronchopneumonia, *Clostridium novyii* hepatitis, listeriosis, haemonchosis, urolithiasis, abomasitis, meningitis and enteritis
  - *S. papillosus* egg counts ranging from 2 to 1,250 epg

**Methods**

Retrospective animal data, post-mortem and ancillary diagnostic results from ovine and bovine cases submitted to the AHDC with a history of sudden death and *S. papillosus* ova detection on fecal examination were evaluated from 2007 through 2019. NY outbreak cases were excluded.

**Life Cycle - Parthenogenic**



Larvated *S. papillosus* eggs (left)

**Conclusions**

- *S. papillosus* should be considered a novel differential diagnosis for sudden death in weaned lambs and calves in the northeastern United States.