Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA
Protect Grow Innovate

Ovine Observer

Contents

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Edition 100 of the Ovine Observer

One hundred editions of the Ovine Observer, 26 years of pasture, meat, husbandry and breeding research.

The first edition of the Ovine Observer was published in September 1997. The key topics of discussion included the export market, finishing lambs on tagastate, preparing sheep for slaughter, progeny testing among other topics. The aim for the newsletter was to improve the communication of research progress and results to producers interested in improving their sheep meat production enterprise.

Introduction

Dr Sarah Davies
Sheep Meat Co-ordinator
Agriculture Western Australia
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Welcome to the first edition of Ovine Observer, an initiative of the sheep meat group within Agriculture Western Australia's Meat Program. With the resurgence of sheep meat as a viable and appealing enterprise, the sheep meat group felt there were insufficient avenues to provide specific information on sheep meat issues. The increased allocation of funds for sheep meat projects in 1997/1998, has allowed the sheep meat group to expand their research and extension activities, and improve communication of the progress and results from these activities. This newsletter is targeted at all producers keen to expand or improve their sheep meat production enterprise. Contributions, or suggestions of topics you would like to see included are always welcome.

The Ovine Observer now has over 600 subscribers. Many from within Australia's borders, and some beyond. The Ovine Observer still holds to a focus on providing information on research, case studies and other key industry findings.

Fact Files 1997 vs 2023

The first edition of the Ovine Observer included some facts about the sheep industry. Looking back we can see how the sheep industry has grown over the past 26 years.

Issue 1 – September 1997

- Average carcase weight for Australian lambs in 1995-96 was 18.5 kg compared to 17.6 kg in 1990.
- Total lamb exports for April 1997 was 6,509 tonnes, shipped weight, and increase of 44% for the same period the previous year.
- The Australian export industry accounts for 25% of total lamb production, the remaining 17% is consumed on the domestic market.
- The value of Australian lamb exports in 1995-96 was $198.7 million, compared to $132.8 million in 1990-91 (Agriculture Western Australia 1997).

Issue 100 – September 2023

- 2023 lamb carcase weights were forecasted to be 25.1 kg (MLA 2023a).
- Total lamb exports for April 2023 was 22,222 tonnes, shipped weight (Australian Gov 2023a).
- In 2022 the Australian export industry accounted for 75% of total sheepmeat utilisation, 25% was utlised on the domestic market (MLA 2023b)
- The value of Australian sheepmeat exports for the 2021-22 financial year was $4.3 billion. The main driver being a global shift from mutton consumption to lamb (Australian Gov 2023b).

References

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Opportunities using eID – Tahara Case Study

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Background

Starting from 2025, Electronic Identification (eID) for sheep will become mandatory in Western Australia. This requirement will initially increase the costs, however, eID also provides opportunities for on-farm management.

Clayton South, who manages his property ‘Tahara’ near Wagin in the Great Southern region of WA, operates a farm with approximately 4,000 Dohne ewes. They started using eID in 2014.

The farm's primary aim is to optimise lamb production, and they had been working toward this goal before looking at eID. They used pregnancy scans to determine the ewes' status and began using a micron disk to identify ewes carrying twins. Over time, Clayton noticed that many of these marked twinning ewes continued to produce twins in subsequent years. Coupled with the scanning process, this led to a rise in lambing rates. In 2008, the average lambing rate was 88%, but by 2014, it had increased to 101%.

Key messages

- It is important to define key on-farm objectives, then use eID data to inform and manage the decisions to achieve those objectives.
- eID provides a system to record flock data, which can be acted on later and used to manage the sheep flock.
- The focus on lambing rates at Tahara resulted in every dollar invested in eID, having a return of $4.00, with payback occurring in the fifth year.

Opportunities for streamlined management

eID plays a crucial role in helping the farm achieve its objectives. While Clayton knew what they wanted to accomplish, manual record-keeping became difficult and unmanageable. Looking back, Clayton realized how eID facilitated the progress:

"eID is a tool that empowers you to record your flock's data and achieve your desired outcomes. It allows you to capture data when you're busy and act on it when you have more time."

For those considering eID adoption today, the key is to define your objectives, and eID can assist in achieving them, whether it's enhancing wool quality, assessing dag scores, monitoring lambing weights, or tracking ewe pregnancy status,” he said.

eID provided an opportunity to make the problem of unmanageable record keeping, manageable. In 2014, Clayton invested in a fully automatic sheep handler on the farm, enabling automatic weighing, 3-stage drafting, and eID reading. A stick reader to streamline flock management was also purchased. The total cost was around $40,000, which is consistent with today's expenses. eID tags were initially acquired only for ewe lambs, costing approximately $1.40 each. Presently, the cost has risen to $1.90 per tag, less the current government subsidy of 75 cents.

Initially, the plan was to study lifetime lambing rates, lamb weights throughout the season, fleece weights, and wool micron. Over time, the focus shifted to lambing percentages, while maintaining stable monitoring of total wool production and micron levels across the flock. eID is used to collect data on pregnancy status, aiding in nutritional management and seasonal lamb weighing. The sheep handler allows for easy separation of the flock into 3 groups during lambing.

Tru-Test weigh scale indicator

Was the investment in eID worthwhile?

The farm's emphasis on lambing rates resulted in a doubling of the improvement rate, from a 2.5% annual increase to 5.1%, after eID adoption. Pre-eID, the farm produced an average of 75 more lambs per year, which increased to 154 additional lambs annually after eID implementation. The investment in eID has aided in the annual increase to 5.1%, however the change in management to keep lambs alive and use of sires with a high weaning rate breeding value are also important factors that contributed to the doubling of the improvement rate.

Summing up, the investment of $40,200 over the years yielded a positive net present value (NPV) of $121,000 over a decade. This indicates that for every dollar invested, the return was $4.00, with payback occurring in the fifth year. If eID ear tags had been used for all lambs, the NPV would have been slightly lower at $110,000, with a benefit-cost ratio of $3.70 for each dollar invested.

Tahara’s improved lambing rates

By focussing on lambing rates and managing the flock, maximising lambs produced, the lambing rates have improved significantly with adult ewes now scanning at 179% while the ewe lambs are now scanning at 91% and total lambing rate has increased to 137% (Figure 1).

To look at the benefits of producing more lambs, before introducing eID the farm was lambing at 97% with 36% of ewes scanning for twins. With no ewe lambs being mated the farm produced 2,900 lambs on a sustainable year in/year out basis. With improved management and monitoring they are now producing 4,800 lambs on the same area, an extra 1,700 lambs. The new approach has now changed the way the flock is managed based on scanning results.

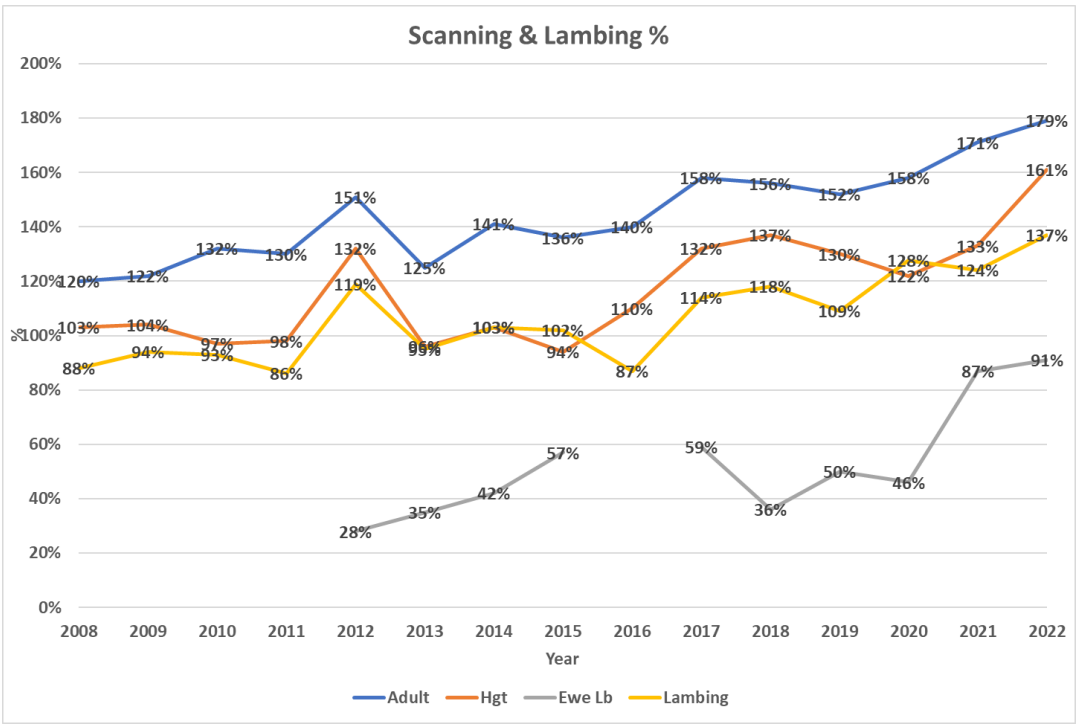

Figure 1: Tahara's lambing and scanning percentage over time

Tahara’s adapted management practices

The data collected from using eID has allowed Clayton to refine and adjust the management of his flock. Using a combination of pregnancy scanning and eID he has set clear objectives to achieve the increased lambing rates. Table 1 outlines the change in management practices before and after implementing eID. This has resulted in culling poor or low performers, such as dry and single bearing ewes, and focusing on keeping early twin ewes as the core of the flock. Provided there is continued high performance, high quality ewes are retained for 6 to 7 years.

Table 1: Tahara's management practices before and after implementing eID

	Before eID		After 10 years of eID
Type	**Core flock**	**Terminal flock**	Status
Dry ewes	Into terminal flock if they have done well in the past or are culled from the farm	Sold straight away	All sold immediately after scanning.
Early twin ewes	Core of the dohne flock going forward. All stay in the main flock.	These ewes stay in the terminal flock provided they are sound the following year.	Core of the flock retained
Late twin ewes	Retained in the dohne flock but early twinning ewes are more important than late twinning ewes. Data is being collected for use in the future around fleece weight and progeny performance.	Late twin ewes in the terminal flock don't move back to the dohne flock	Managed to retain but sold if other characteristics undesirable
Early single ewes	Retained in the dohne flock at this stage, lower performing sheep moved to the terminal flock depending on how many others have gone.	Retained in the terminal flock only if enough sheep haven't moved from the dohne flock.	Sold after lambing
Late single ewes	From 2018 any late single ewes from the year before will be moved to the terminal flock or potentially culled if they aren't performing	Ewes most likely to leave the farm after the dry terminal ewes are sold.	Sold after lambing
Ewe lambs	N/A	N/A	Retained if scanned in lamb. Dries sold depending on how ewe lamb results.

Benefits associated with using eID

There are numerous advantages linked to the utilization of eID:

- Enhanced flock decision making

  All ewes on the farm are now categorised from 1 to 4,000. Instead of culling entire age groups, individual ewes can now be selected for culling, facilitating better decision making. This process is streamlined by running the ewes through a sheep handler. The farm retains higher-quality older sheep while easily selling younger sheep with lower potential, leaving the best genetics on the farm.

- Efficient data management

  eID enhances the capture and recording of data. During activities like crutching, dag scoring can be done and acted upon later. This eliminates the need to immediately address issues and allows information to be collected and processed at a later time. Improved data management has been pivotal in achieving the current lambing rate on the farm.

- Simplified flock management

  The sheep handler enables one-pass pregnancy scanning. Following scanning, the flock is separated into groups based on dries, singles, and twins, allowing for tailored nutritional management.

- Streamlined cull management:

  Identification of problematic ewes for culling is straightforward with eID. Ewes of concern can be earmarked for removal in a cull file, to be drafted out of the flock at a later time.

Why should sheep farmers anticipate benefits from eID?

According to Clayton South, the primary advantages of eID revolve around decision making. Data can be collected during specific tasks and acted upon later, leading to improved decision-making processes. eID doesn't instantly make one a better farmer, but it facilitates better decision-making. While the focus has been on improving lambing rates, diverse farmers can leverage eID for various purposes such as enhancing wool quality or volume, meat production, or other aspects. Effective management using eID enables efficient recording and eventual benefits.

How much does entry into eID cost?

Beyond the purchase of the ear tags, farmers aiming to reap the benefits of eID can begin with a relatively modest investment and progress at their own pace. An uncomplicated enclosure will be priced at approximately $3,000, while a handheld device for data capture will cost around $2,200. Adding an antenna to the enclosure will require an additional $1,000. Scaling up to a fully automated drafting system and handling equipment can entail higher costs, reaching up to $50,000, but it substantially enhances the value of the investment.

When Clayton invested in eID, he dedicated considerable time to determining his objectives. The optimal approach is to address the following question:

"What is the foremost aspect of my flock that can benefit from data-driven insights?"

By answering this question, you can identify the starting point for your eID journey.

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Appendix: Assumptions used in the analysis

The following assumptions have been used in this report:

- The analysis hasn't factored in the change in stocking rate associated with having more twin bearing lambs in the flock
- Wages costs $55/hour including all costs, $104,000 per year for an experienced farm worker is used as the base
- Discount rate: 6.5 % per year (the long term rate accepted by broadacre farmers in WA, being 2.5% capital gain and 4% return, the value is below that accepted in other industries)
- Inflation 2% per year
- Lambing percentage 105%
- Twinning percentage 45%
- eID ear tags cost $1.90 each. Rebate $0.75.
- Visual ear tag cost $0.30 each
- eID scanner $3,000
- Sheep handler cost $33,000
- Lupin cost per tonne $350
- Meat value per kilo $2.97/kg (5 year average to July 2023)
- Wool value per kilo $10.67/kg (5 year average for 19 micron wool in WA)

Coxiella burnetii (Q-fever) in Australian breeding ewes

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Introduction

The reproductive performance of maiden ewes is often lower than for mature ewes due to greater losses of the fetus or lamb between pregnancy diagnosis and lamb marking. The causes of these are not well defined, however a number of diseases may cause abortion and poor lamb viability in Australian sheep.

Coxiella burnetii is a bacteria that has been detected in Australian livestock (sheep, cattle, goats) and wildlife (e.g. kangaroos), as well as a wide variety of domestic and feral animals. People can become infected with *C. burnetii* through infected fluids or by inhaling bacteria in dust or air, resulting in the disease Q-fever. In sheep, *C. burnetii* infections may cause abortion, stillbirth and the birth of weak lambs that are less likely to survive. Infection is more likely to cause abortion if sheep are infected for the first time during pregnancy, with no lasting impacts on subsequent pregnancies. The risk of exposure to infection increases with time and previous infection confers some level of immunity. This means that younger ewes are particularly at risk of disease outbreak if infection occurs during pregnancy. The prevalence (frequency) of *C. burnetii* infections in Australian sheep is not well studied, nor whether infection is an important cause of abortion and perinatal lamb mortality in maiden ewes.

Therefore, the aim of this study is to determine if natural exposure to *C. burnetii* is widespread in breeding ewes and whether seropositivity is associated with poor reproductive performance of maiden ewes.

Key findings

- There was no evidence of widespread exposure to *C. burnetii* in breeding ewes with seropositivity (detection of antibodies) in less than 0.1% in primiparous ewes and 0.4% in mature ewes.
- Exposure to *C. burnetii* was detected in at least one sheep on 3 farms (11% farms) in this study. These farms were located in Western Australia, South Australia, and Victoria.
- *Coxiella burnetii* was not detected by qPCR in tissue samples from aborted or stillborn lambs recovered from primiparous ewes.

Materials and methods

Study location and sheep flock characteristics

This study was conducted at 28 farms using 30 total flocks located in Western Australia, South Australia, and Victoria between 2018 and 2020, with approximately 200 maiden ewes from each farm randomly selected at mating.

Maiden ewes were mated as either ewe lambs or maiden hogget ewes and monitored between mating and lamb marking.

Reproductive data

Foetal mortality was determined via repeated pregnancy ultrasounds at 62–101 days (scan 1) and 108–136 days (scan 2). Lamb mortality between birth and marking was determined for each ewe based on birth type (single, twin or triplet), birth status (lambs dead or alive at lambing rounds) and survival status at marking. Aborted and stillborn lambs were collected for necropsy on a subset of 7 flocks in Western Australia.

For the ewe lamb flocks, foetal/lamb mortality between scan 1 and lamb marking was 36% with mid-pregnancy abortion detected in 5% ewe lambs (range 0–50% ewes). For the maiden hogget flocks, foetal/lamb mortality between scan 1 and lamb marking was 29% with mid-pregnancy abortion detected in 1% ewe hoggets (range 0–4%).

Coxiella burnetii serology and qPCR

Blood samples were collected from maiden ewes at marking, and from randomly selected mature ewes aged 3 years and older (20 mature ewes per farm). A subset at least 40 maiden ewes from each flock were selected for *C. burnetii* serology (detection of antibodies) with ewes that aborted or failed to successfully rear a lamb selected where possible. Ewes that had reared single or twin lambs were included for flocks with less than 40 ewes that failed to rear a lamb.

Serology for anti-*C. burnetii* IgG antibodies was conducted Vetpath Laboratories (Perth, Western Australia) using a commercial indirect ELISA kit (ID Screen Q-Fever Indirect Multispecies, ID Vet, France) according to the manufacturer's instructions.

Tissue samples from aborted or stillborn lambs were screened using qPCR.

Statistical analyses

Apparent *C. burnetii* seropositivity (% sheep with *C. burnetii* IgG antibodies) was calculated using number of positive samples as a proportion of samples tested with 95% confidence interval determined using Jeffreys method. The true *C. burnetii* seropositivity proportion and 95% credible intervals (95% CrI) was estimated using Bayesian inference. Seropositivity (%) for the ewe age categories (ewe lamb, maiden hogget, mature ewes) were compared using a two-sample z-test, with P-value < 0.05 accepted as significant.

Results

Apparent *C. burnetii* seropositivity (detection of antibodies) was 0.08% in maiden ewes (ewe lambs and hoggets) and 0.4% in mature ewes (Table 1). There was no difference in detection between maiden ewes and mature multiparous ewes ($P = 0.174$), nor between maiden hoggets and ewe lambs ($P = 0.165$).

Table 1: Apparent and estimated true *C. burnetii* seropositivity using indirect ELISA for primiparous ewes mated as ewe lambs or yearlings) and mature multiparous ewes

		Ewes sampled				
Type		Flocks (n)	Individual ewes (n)	Seropositive samples (n)	**Apparent seropositivity** % (CI95%)	**Estimated true seropositivity** % (CrI95%)
Primiparous ewes	Ewe lambs	19	839	0	0 (0, 0.3)	0.1 (0.0, 0.4)
	Yearling	11	440	1	0.2 (0.0, 1.1)	0.3 (0.0, 1.1)
Mature ewes		28	558	2	0.4 (0.1, 1.1)	0.3 (0.0, 1.0)

CI95%: 95% confidence interval
CrI95%: 95% credible interval

At least one seropositive sheep was detected on 11% (3/28) of farms in this study. These 3 flocks were located in Western Australia, South Australia and Victoria.

Coxiella burnetii was not detected by qPCR in tissue samples from 35 aborted or stillborn lambs recovered from a subset of seven flocks in Western Australia.

Discussion

There was no evidence to implicate *C. burnetii* was an important contributor to abortions or perinatal lamb mortality in 30 maiden ewe flocks on farms across southern Australia. The low detection of *C. burnetii* seropositivity (detection of antibodies) was consistent with the absence of detection of *C. burnetii* in tissues from aborted or stillborn lambs from a subset of farms. Consequently, there was no evidence to support the implication of targeted preventative measures such as vaccination, which is utilised in some overseas countries, on these farms.

Our findings were consistent with a recent reviews of veterinary laboratory investigations that reported coxiellosis (Q-fever) to be an uncommon diagnosis in Australian sheep abortion investigations. Nonetheless, *C. burnetii* should be included as a differential diagnosis (potential cause) in sheep abortion and perinatal mortality investigation protocols due to the sporadic nature of coxiellosis and important zoonotic implications.

Despite the low level of *C. burnetii* seropositivity in these flocks, contact with sheep should still be considered a risk for Q-fever in humans. Sheep have been associated with human cases of Q-fever in in Australia and overseas, including from sheep with no symptoms of illness and without detectable seropositivity. People working with sheep (including farm, abattoir and veterinary staff) should take precautions to reduce the risk of zoonotic *C. burnetii* infection including appropriate personal protective clothing when handling birth material or lambing ewes (including gloves and mask where possible), good hygiene practices, controlling dust and vaccination.

Conclusion

There was no evidence of widespread exposure to *C. burnetii* in sheep from farms in southern Australia. Infection with *C. burnetii* was unlikely to be an important contributor to abortions or perinatal lamb mortality in maiden ewes on these farms.

Regardless, there is occupational risk of zoonotic infection with *C. burnetii* and people working with livestock (including sheep, goats and cattle) in Australia should take appropriate measures to avoid infection (Q-fever).

Further information

Report on Reducing foetal and lamb losses in young ewes

Scientific paper (free access)

DPIRD ewe abortion and newborn lamb death surveillance program

Acknowledgments

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Adapted for Ovine Observer with assistance of Sofia Testa (Murdoch University Bachelor of Agricultural Science student).

Lupinosis in Sheep

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Lupinosis is a liver disease mainly caused by the consumption of lupin stalks (or seeds) colonised by the fungus *Diaporthe toxica*. It can be expressed as either a severe acute disease or as a chronic liver dysfunction syndrome. Acute disease is most common in livestock on sandplain or WA blue lupins following summer or autumn rains. Chronic lupinosis is commonly associated with narrow-leafed lupin stubbles or when lupin seed is fed. Lupinosis may also predispose sheep to a nutritional muscle disease (myopathy) called lupinosis-associated myopathy.

Lupinosis most often occurs in summer and autumn, as occurred in early 2023, with DPIRD Field Veterinary Officers investigating a significant number of cases from Geraldton to Albany in April and May 2023 after farmers fed lupin stubble to sheep very late in the dry season.

Yellow, swollen liver from sheep suffering acute lupinosis

Historically lupinosis was a very significant cause of livestock deaths and reduced production in WA prior to 1990. Up to this time, all narrow-leafed lupin varieties were susceptible to *Diaporthe* colonisation. A successful breeding program undertaken by DPIRD developed varieties of lupins resistant to stem colonisation by *Diaporthe*. All current commercial narrow-leafed lupins grown in WA have some resistance to *Diaporthe* stem blight.

All livestock, including sheep, cattle, goats, horses and pigs are susceptible to lupinosis. Sheep are the most susceptible. Weaners are most commonly affected because they eat less lupin seed and more stem. The liver damage that occurs in lupinosis will increase the likelihood of pregnancy toxaemia in late pregnant ewes or cattle. Stock affected by lupinosis may develop secondary photosensitisation.

What do you see in stock with lupinosis?

Acute signs:

Acute signs of lupinosis can be displayed by a marked appetite reduction initially but this is often not noticed before other signs become apparent. Other signs include severe depression, jaundice (yellowing of the white of the eyes and other mucous membranes), lethargic animals (isolated animals in a paddock or a tail in the mob) or dead and moribund animals. On postmortem, jaundice is evident in the tissues and the liver is markedly swollen and yellow.

Chronic signs:

Chronic signs of lupinosis can be shown in affected animals as loss of condition, weak, lethargic animals which are not keeping up with the rest of the mob or off on their own. Also, sheep moving with a stiff-legged gait and hunched back or wandering in disorientated manner, becoming caught in fences or pressing their head against objects.

Signs that may be seen in both acute and chronic lupinosis:

In both acute and chronic lupinosis signs such as abortions, reduced lambing percentages (as a result of reduced ovulation and foetal loss) or reduced wool production and fibre diameter with more tender wool can be displayed.

Diagnosis

Lupinosis should be suspected in sheep not doing well in any lupin stubble or blue lupin paddock, especially if there is less than 50 kilograms seed per hectare on the ground. A visual examination of affected sheep may reveal yellow colouring of the mucous membranes and in the corner of the eye. The signs of chronic lupinosis may be subtle (e.g. just apparent ill-thrift). Veterinary advice and postmortem should be sought to diagnose the cause of illness. Laboratory examinations of blood samples and liver and brain tissue will determine if lupinosis is the cause of the clinical signs.

Treatment

If lupinosis is suspected immediately remove all stock from lupin stubble or WA blue lupin paddocks. Following this, place affected stock in a small paddock with shade and water. Provide sheep a small amount of oats in the best quality grassy paddock, or good quality oaten hay.

When undergoing treatment paddocks with green plants should be avoided, as stock will be susceptible to photosensitisation.

Do not feed lupins or feed blocks as the damaged liver is unable to effectively metabolise a high protein diet. Reduce all stress, restore appetite and avoid dehydration during the first couple of weeks of the recovery period.

If animals regain their appetite, they usually fully recover within 6 months. Animals that are severely affected and do not start eating within a couple of days should be euthanised.

Prevention

Virtually all stands of lupins in WA will be infected and colonised to some degree by *Diaporthe toxica*. The new narrow-leafed lupin varieties are resistant, but not immune, to the fungus. Under most conditions they develop very low levels of toxicity and their stubbles provide a very valuable food source for all classes of sheep. In practice, lupinosis

only occurs from grazing lupin stems, so good management and observation of the paddock and stock will prevent losses.

Proactive actions to prevent lupinosis include:

- Grazing lupin stubbles early and before cereal stubbles as toxicity slowly increases with each summer rain event.
- Provide two watering points in a paddock to promote even grazing of the stubble. Weaner sheep concentrate their grazing within 600-800 metres of watering points.
- Pre-feed lupin seed to train stock to seek out lupin seed in stubbles.
- Check stock regularly for signs of lethargy, reduced appetite and hollow flanks.
- Remove stock from stubble paddocks before the lupin seed count gets below 40 seeds per metre square (equates to 50 kg/ha of lupin seed). At levels below this sheep typically lose weight and seek more stem material.
- Keep the flock size to less than 600 for weaner sheep.
- Sheep should be removed from blue lupin paddocks after summer rainfall and not returned until the stalks have dried out. Check the sheep daily for the first week after reintroduction.
- It is not necessary to remove sheep from white lupins after summer rain, but sheep should be checked daily for a week after significant rainfall.

Check lupin seed before feeding

Lupin seed may also become infected by *Diaporthe toxica* and cause outbreaks of lupinosis. Lupin seeds can be infected during seed and pod maturation, either from fungal lesions on the surface of the pod, or systemically via pod stalks colonised by the fungus. Seed infection is more likely when there is heavy rain during the period of seed and pod maturation. Infected toxic seeds are discoloured, ranging in colour from pale yellow through to a dark purple-brown. Infection of the pods and seeds is termed *Diaporthe* pod blight, and different lupin varieties exhibit different degrees of susceptibility and resistance to this.

- If more than 10% of the lupin seed is discoloured (pale yellow to a darker purple brown), it should not be fed.
- If less than 10% of the seed is discoloured, but more than half the discoloured seeds present are dark purple-brown or have obvious 'mould', only limited amounts should be fed.

Other diseases that may look like lupinosis:

Jaundice – yellowing of mucous membranes

- **caltrop poisoning**
- other plant liver toxins (signal grass, Paterson’s curse)
- **eperyrthrozoonosis**

Ill-thrift

- ovine Johne’s disease
- parasites (scour worms)
- **trace mineral deficiency (cobalt, copper, calcium)**
- protein or energy deficiency.

DPIRD's **Significant Disease Investigation Program** provides subsidised veterinary investigations and laboratory testing for any significant livestock disease with stock losses or which has similar disease signs to an exotic or reportable disease.

Disease investigations support market access for livestock and livestock products by providing evidence of our proof of freedom from diseases of concern to our trading partners.

If you see unusual disease signs in your stock, call your private veterinarian or **DPIRD field veterinary officer** or the Emergency Animal Disease hotline on 1800 675 888.

DPIRD veterinary officer contacts

For more information on lupinosis, contact your local DPIRD Veterinary Officer. To find the contact details of your closest DPIRD Field Veterinary Officer, go to the **Livestock Biosecurity program contacts** page.

Dry season response 2023

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Background - The decision making context

Parts of WA currently have below average soil moisture and below average food on offer (FOO) for the start of spring. Going forward, the forecast for spring rainfall is an increased chance of lower than normal spring rain, leading to a poor outlook for crop yields and summer/autumn feed availability. These dry conditions have coincided with and possibly exacerbated low sheep prices. This is different to other recent poor seasons when the sheep market was buoyant and destocking decisions were associated with very positive cashflow outcomes.

The WA mutton price in the saleyard averaged 174.6 c/kg cwt in August 2023, down 51% compared to August 2022 which averaged 355.5 c/kg cwt. This is the lowest monthly average since April 2013. The Eastern states has followed a similar trend with saleyard mutton prices down 60% year over year, however they remain higher than WA averaging 217 c/kg cwt. Prices have fallen further in September with mutton prices averaging 92.2 c/kg cwt the week of 15 September (WA).

The live export market has helped limit the falls with increased live exports. So far live export numbers in 2023 (Jan to Jul) are above the Jan to Jul exports last year with a total of 431,841 sheep exported live compared to 289,017 this time in 2022. In dry regions agistment may be available to some producers as there are some regions in WA having average or above average pasture growth.

Currently killing space is limited relative to the number of animals being turned off. This is leading to timeliness problems for turning off both finished lambs and older animals. Furthermore, the discount for selling in the saleyards is higher than usual. This could be important when budgeting the cashflow implications of selling animals.

Key messages:

- Know your farms position and have a plan in place. It is important to outline your most limiting factor and to match your plan to that factor.
- The optimum proportion of the farm to crop and the optimum number of stock to carry varies with commodity prices. Know if your farm sits under or over stocked relative to the current and predicted prices.
- Prioritise what sheep classes to retain in drier seasons and use that list to make culling decisions. When culling ewes, outline selection pressures to cull the less productive animals.
- 2024 will be a high value year for pregnancy scanning the mated ewes, so the empty ewes can be sold.
- 2023 is an important year to wean in a timely fashion. Delaying weaning beyond 8 to 10 weeks is inefficient use of feed and also reduces your ability to allocate feed to the priority mobs.

Technical tips

In WA the link between a poor season this year and the probability of different season types next year is very weak. So, although this year is tough, mental and physical preparedness is required to manage for a profitable season in 2024. In order to prepare for poor seasons some key tips and tricks to keep on top of management include:

Tip 1: It is much cheaper – only requiring half the amount of grain – to maintain weight than allow weight loss and try to regain weight later. Therefore, it is recommended to start with low rates of feed early and gradually increase.

Tip 2: Sheep will expend 1 to 2 MJ/d walking when feed is scarce. If FOO is low and quality is poor then the energy expended is not offset by feed consumed.

Tip 3: Joining ewes in CS less than 2.3 is an animal welfare risk and also a profit risk. Ewe deaths can be very high which means not mating ewes with CS < 2.3 is recommended.

Tip 4: Rules of thumb for level of grain feeding

Table 1: Amount of extra feeding required (MJ) to meet a LW change target. The increase in feeding above the level currently being carried out.

Aim	Fed on pasture MJ (kg)	Confinement feeding MJ (kg)
To reduce LW loss by 1kg	40 (3)	25 (2)
To achieve LW gain of 1kg	100 (8)	50 (4)
To maintain a 1 kg heavier animal during pregnancy and lactation	30 (2.5)	28 (2.3)

Feeding on pasture requires more MJ fed for the same LW outcome because:

1. animals expend more energy walking when grazing on pasture
2. a higher proportion of the grain offered is wasted in the paddock
3. supplement offered in the paddock reduces intake of the pasture. Therefore, an extra 1 MJ of supplement consumed results in less than 1MJ of extra intake. The magnitude of this effect depends on the quality and quantity of paddock feed available.

Tip 5: Most weaner deaths occur in the first 4 months after weaning, therefore these 4 months are the critical period. Weaners growing at 250 g/month are at a high risk and have a low survival. Increasing their growth rate by 1 kg/month lifts them to a low risk region and increases survival by 30%—55% depending on weaning weight.

Tip 6: With current wool prices 20% of extra grain fed for maintenance is recouped in wool income. This is allowing for the efficiency of wool growth and the change in fibre diameter due to increased growth. It doesn't include an impact on staple strength which could be important if the extra supplementary feeding is increasing wool growth during the weakest period of the staple.

Tip 7: An effective method for minimising the total amount of supplement required is to separate the tail of the mob. This allows targeting of the supplement to the animals that require it, rather than feeding the whole mob to manage the mortality risk for a

subset of the animals. Segregating ewes on CS and allocating feed appropriately will be a high value practice this year.

Management in a poor season – Getting the big picture correct

Be prepared

The current position and the forecast for the remainder of the season can give a picture of the feed that will be available for the coming summer and autumn. This outlook allows for feed budgeting and estimating the likely requirements for supplement.

Know your own position

- Know the role of sheep in the system and the capacity to increase other enterprises (e.g. cropping) in 2024 and 2025 if stock numbers are reduced.
- Know what paddock feed is available.
- Know the water quantity and water quality in the areas where the feed is available and what is available if confinement feeding.
- Understand your cashflow.
- Know what skills are available, for example feed budgeting and confinement feeding.
- Know your own susceptibility to stress. Is a system preferred that requires continuous monitoring and adjustments or is it preferable to make the hard decisions now to reduce the decisions required later?

In situations where stock is a minor contribution to farm income the best option is likely to be to sell down to a manageable number and concentrate the management focus on the crop enterprise.

The most limiting factor

The plan adopted needs to relate to the factor that is most limiting in the given situation. What is your most limiting factor?

If cashflow will limit grain purchases, then selling sheep early is better than retaining animals and experiencing excessive weight loss and potentially having a forced sale of animals in poor condition later.

Calculating the most limiting factor can be done with a feed budget that includes all the stock that would normally be retained after the coming shearing.

If animals need to be sold, consider which age groups and classes are the priority mobs.

Consider alternative outcomes

The outlook for the future is just that and it may turn out differently. Consider alternative weather and market conditions, particularly, it is worth considering a worst case scenario and having a contingency plan if that were to happen. This ensures you are not caught off guard and incur big losses if it were to occur. In the current situation the worse case scenario would be rainfall around Christmas that affects the dry feed quality, followed by a late break to the season.

Remember the people on farm

Early decision making reduces stress because the decision is made and you can move on – know your response to stress. Some like the continual decision making and monitoring the unfolding situation, others prefer a set and forget.

The optimum flock size / the big picture settings

A recurring upturn in meat prices has been observed over the last 10 years, which has recently transitioned into a downward trend within the last 12 months. The optimum proportion of the farm to crop and the optimum number of stock to carry varies with commodity prices. Did you overshoot the rebuilding of your stock numbers in response to good seasons and high prices? If so, you will be over-stocked for current market conditions even with normal seasonal conditions. In this situation a decision to destock in response to the current poor seasonal conditions would be complementary with reducing stock numbers if the medium-term price outlook is for prices to remain depressed.

A reduction of $2/kg for meat is associated with an increase in crop area of 10 to 20% and a reduction in flock size of 20 to 30%. These results were generated as the average for a typical flock in the Great Southern region of WA lambing in May or in July and are only indicative of the adjustment for other regions. These number of stock on the farm is represented relative to the optimum number for a lamb price of $7/kg (Figure 1).

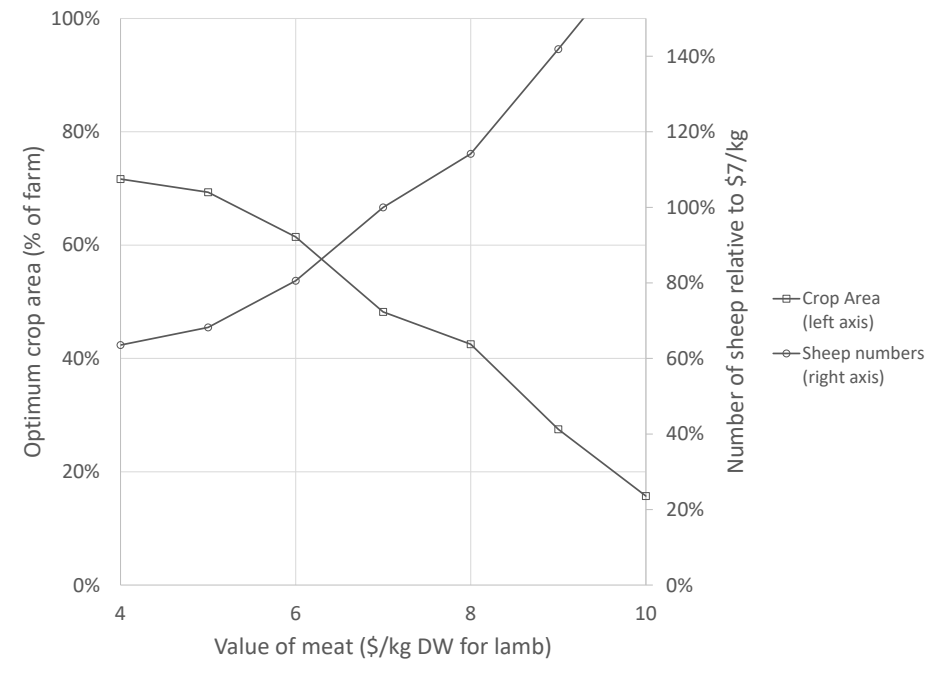

Figure 1: Comparison between the value of meat and the optimum cropping area

Priority mobs

Priority order for sheep retained

Prioritising what sheep classes to retain is important in drier seasons when making culling decisions. High priority classes such as mature productive ewes would be intended to keep compared to lower priority classes such as wether lambs or hoggets.

Sheep classes in priority order for selling:

1. wether lambs or wether hoggets
2. early sale of surplus young ewes
3. low productivity ewes (if they can be identified)
4. mature ewes 6.5 yo, 5.5 yo and 4.5 yo
5. ewe lambs (2023 drop)
6. rising maidens (1.5 yo)
7. mature ewes 2.5 & 3.5 yo.

When considering selling breeding ewes, there is a good opportunity to apply selection pressure to cull the less productive animals. Use index selection if the information is available, if not ewes that have not reared a lamb – which can be assessed at weaning by udder palpation – would be the priority to sell.

If culling the breeding ewes based on productivity is not possible then the focus is on selling those ewes that have the lowest future earning capacity and least impact on future numbers. So, the 2.5 and 3.5 yo are the highest priority to retain because they will produce the most lambs in 2024 and 2025 and they are the most robust ewes.

Bring sales forward/timing the selling decision

There are several advantages of bringing sales forward for the animals that have been identified for sale. The advantages of selling early:

- removes the requirement for supplement that would have been fed
- Retains extra dry paddock feed that would have been consumed. This dry feed is likely to be high quality and it will delay the time when the paddocks get bare – is erosion an issue. The value of the pasture not grazed is approximately one third of the value of the equivalent number of MJ of energy from supplement.

The main challenge with selling early is sourcing shearers to shear the animals prior to sale. The loss of the wool income will likely negate the feed benefits of early selling if shearing is not possible.

Pregnancy scanning

2024 will be a high value year for pregnancy scanning the ewes that are being mated so the empty ewes can be sold. This is a high value practice in a normal year for flocks that scan prior to the break of the season, it will be even more valuable this year. Book in with a scanner early. Use this opportunity to start (and continue) with this high value management practice.

Cost of delaying weaning

2023 is an important year to wean in a timely fashion. Delaying weaning beyond 8 to 10 weeks is inefficient use of feed and also reduces your ability to allocate feed to the priority mobs. The benefit to the lamb from delaying weaning is much less that the cost to the ewe. Early weaning ensures maximum opportunity for the ewes to be in a suitable condition for the 2024 lambing season.

For a more detailed report see the Strategies and tactics for sheep producers in a poor season webpage.

Seasonal Updates

2023 has seen a variable and challenging season for some producers.

A range of information and decision making tools are available on the Department of Primary Industries and Regional Development's (DPIRD's) Season 2023 webpages.

This includes information on animal welfare, condition scoring, confinement feeding, and feed budgeting, as well as rural support services.

Latest updates and advice

Livestock

Sheep producers impacted by the challenging seasonal and industry conditions are encouraged to plan and consider options to manage flock condition over coming months. Refer to resources in Livestock management.

Support Services

For information on support services available to help people in rural WA areas find the assistance they need, please see WA's rural support services webpage and directory.

Crop

The northern and eastern fringes of the grain belt have experienced a very dry growing season with poorly established crops and pastures presenting a high soil erosion risk. Low rainfall has limited yield potential of established crops. See available resources in Crop management and Rural support services sections.

Early September rainfall maintained yield potential in the southern and central grain belt but frosts will have reduced yield potential in impacted areas. See Crop management section to manage frost and other seasonal risks.

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