

How to maximise lamb survival

Dr Gordon Refshauge

NSW DPI
Cowra

15 June 2023

Local Land Services

Trunkey Creek Lamb Survival this Winter

Central Tablelands Local Land Services, Bathurst Merino Association and Sheep Connect NSW bring you the Trunkey Creek Lamb Survival Information Session at the Trunkey Creek Hall.

Guest speakers include:

Gordon Refshauge, NSW DPI

Brett Littler, Central Tablelands Local Land Services livestock

Katie McPherson, Central Tablelands Local Land Services NRM



Presentation structure

Why lamb survival is important & causes of death (~15 min)

Questions

Management to improve survival

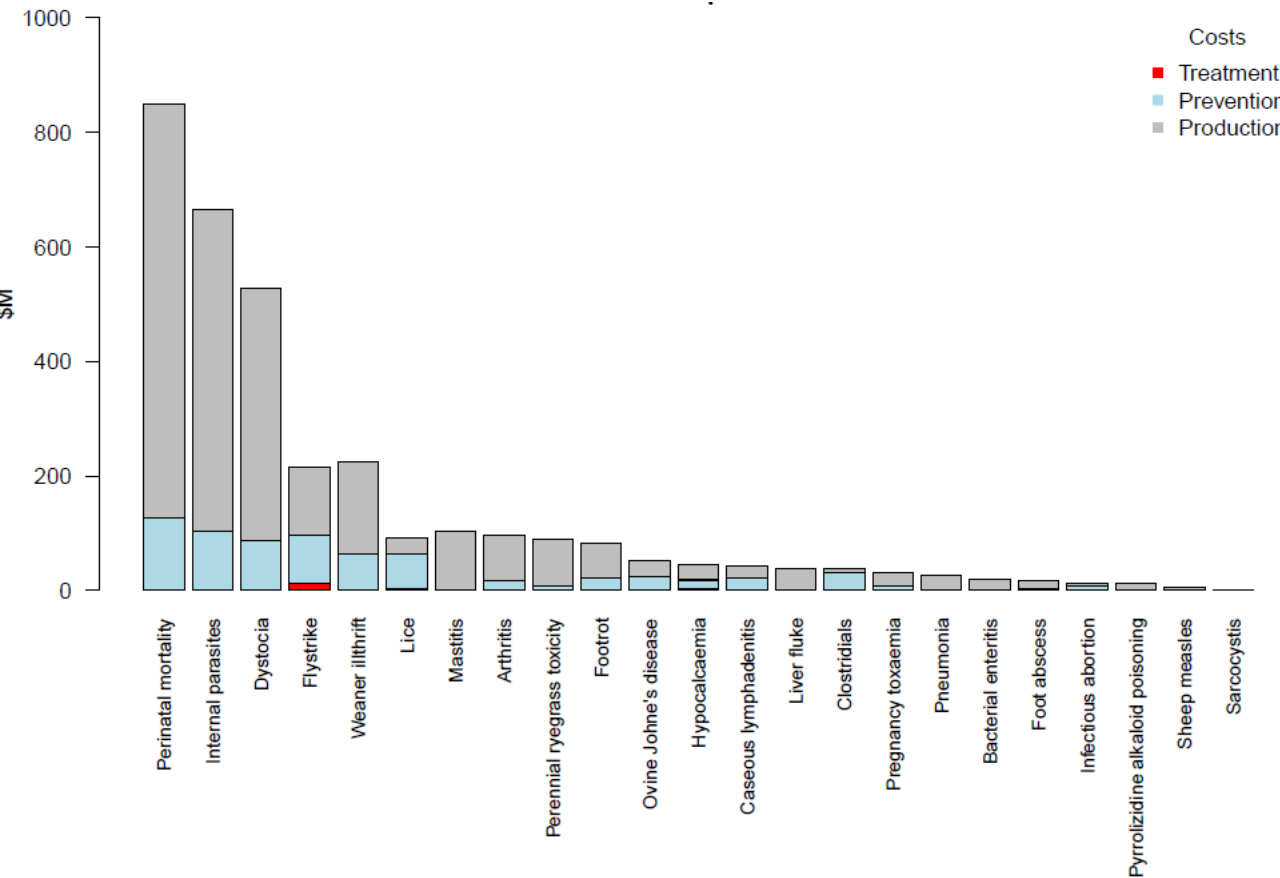
- Pre-lambing management (scanning, nutrition) & paddock selection (FOO, shelter) (~15 min)

Questions

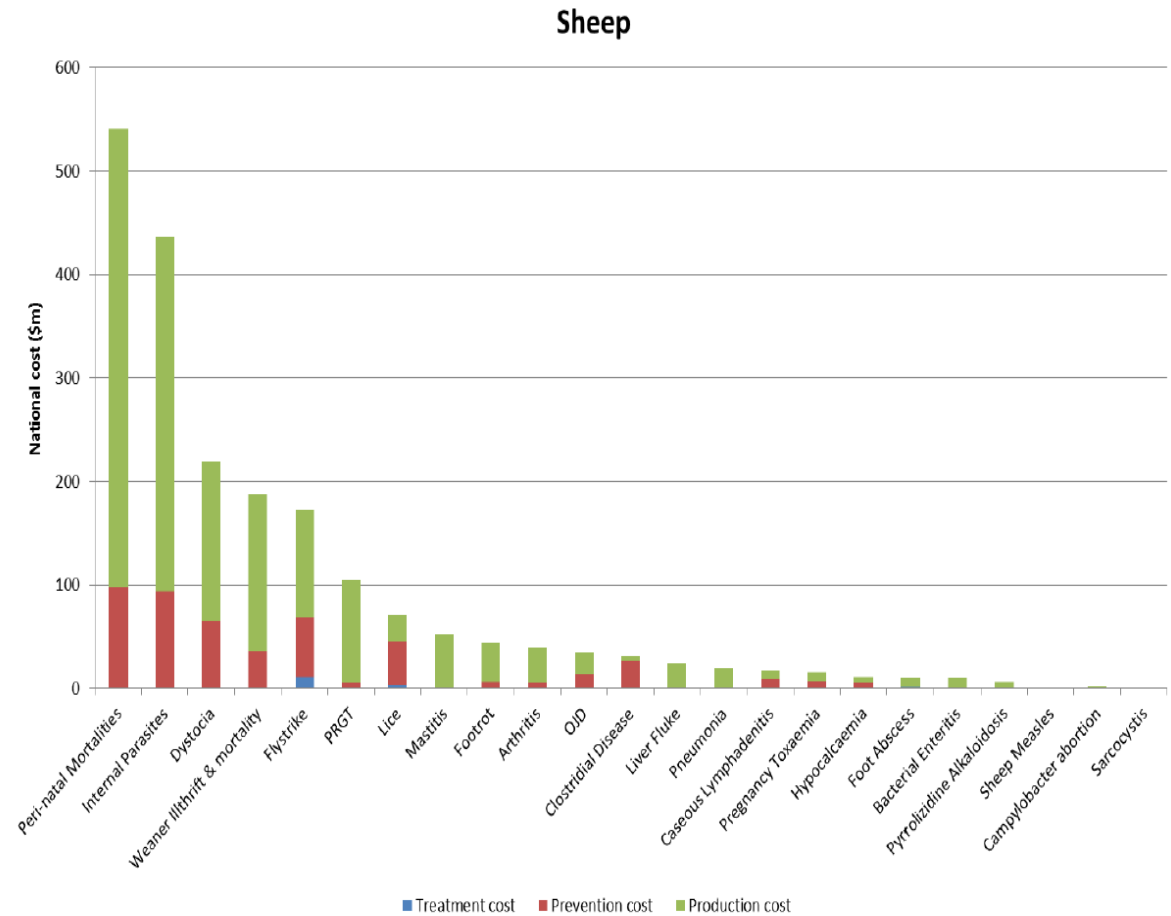
Selection to improve survival (wet & dry, ASBVs, BTRT) & take-home messages (~15 min)

Questions + optional lamb autopsy

Why lamb survival is important



Source: Shephard et al. (2022). MLA Reports. B.HAE.0327



Source: Lane et al. (2015). MLA Reports. B.HAE.0010

How many lambs die?

Global average 15%

Source: Dwyer et al. (2016)

Estimates suggest 12 million lambs p.a. Australia

Source: Kubeil (2017). MLA Report. E.REP.1404

12 million? Yikes! Is that right? Let's work backwards:

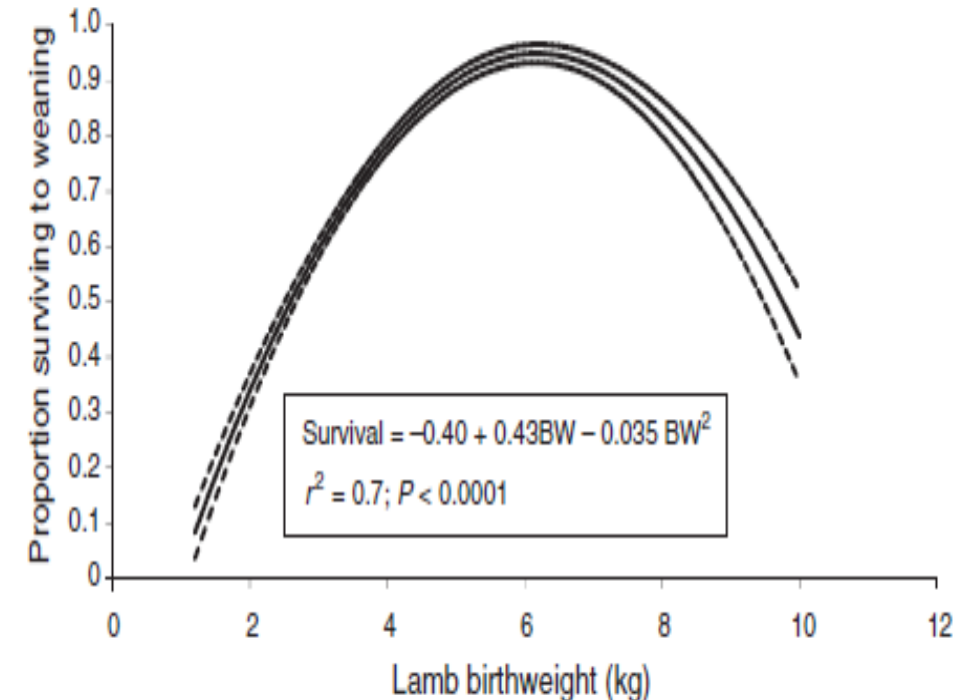
Breed	Ewes %	No. ewes (M)	Est. marking %	Lambs marked (M)	Est. lamb survival %	Lambs born (M)	Lambs died (M)
Merino	64%	29.5	90%	26.6	78%	34.1	7.5
All others	36%	16.6	105%	17.4	85%	20.5	3.1
Total		46.1		44.0		54.6	10.6

Sources: MLA & AWI Wool and Sheepmeat Survey Reports

12 million? Depends on lamb survival rate (no national data)

What factors affect lamb mortality?

- Litter size Singles = 10%; Twins 30%; Triplets 30%+
- Birthweight Ideal 4 kg to 6 kg
- Ewe age Maidens lose more lambs
- Sex More males die
- Twin mob size 2% / 100 ewes in pdk (0-6%)



Sources: Hinch & Brien (2014); Atkins (1980); Geenty et al. (2014)

What is killing all these lambs?

Dystocia 1	9%
Dystocia 2	21%
Dystocia 3	18%
Starvation	25%
Prem./Dead in utero	10%
Predation	7%
Cold exposure	5%
Other, incl. infection	6%

} 48%

Source: Refshauge et al. (2016)

Dystocia

40% of ewes at lambing = dystocia

Ewe deaths (~ 1 - 2% of p.a. losses)

~48% of lamb deaths

[Source: McQuillan et al. \(2020\)](#)



Factors implicated **low muscle glycogen, pregnancy toxaemia, mineral imbalance, low antioxidant status**, stress, **phytoestrogens**, genetics.

[Source: Jacobson et al. \(2020\)](#)

Hypoxia birth impairs teat seeking, suckling ability & thermogenesis

Hypoxia is fatal without milk and warmth.

Starvation

Lamb deaths (~ 25% of neonatal losses)

Lambs born to dam with unsound udder 1.5x more likely to die

Of dead lambs, lambs 4.6x more likely to die from starvation if dam had unsound udder

Better udders improve survival and growth to weaning

Source: [Smith et al. \(2023\)](#)



External inspection



Any questions?

Management to improve lamb survival

Pregnancy scanning & body condition scoring & setting targets

Paddock selection (Feed on offer, % legume, shelter, mob size)

Predator control actions

Pre-lambing management – pregnancy scanning

Average ewe is mated for 9.1 weeks

50% of Aust. sheep producers pregnancy scan

31% identify litter size (pregnancy scanning)

Source: Howard & Beattie (2018). MLA Report. E.AWW.1501

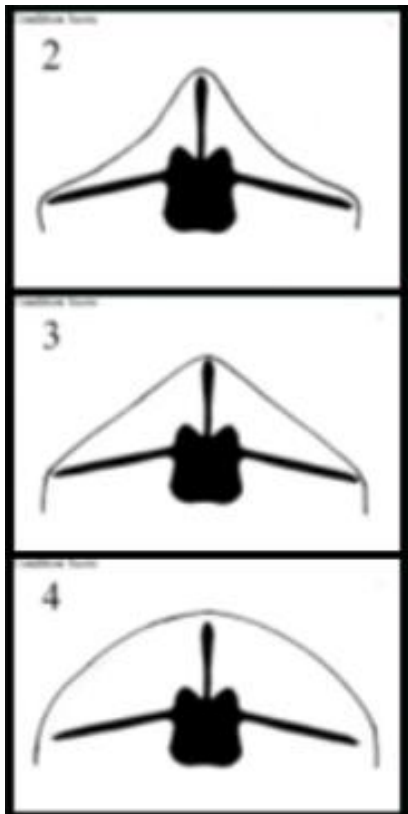
Accurate pregnancy scanning involves:

- Correct timing (80-90 days after rams introduced)
- Correct ewe preparation (off feed and water ~ 12 hr)
- Good probe contact
- Good scanner machine & skilled scanner (litter size and fetal age)
- \$5.75 ROI (twin); \$3.30 (empty)

Source: Brien et al. (2022). MLA Report. B.LSM.0021

Pre-lambing management – condition scoring

Most producers do not assess body condition with their hands

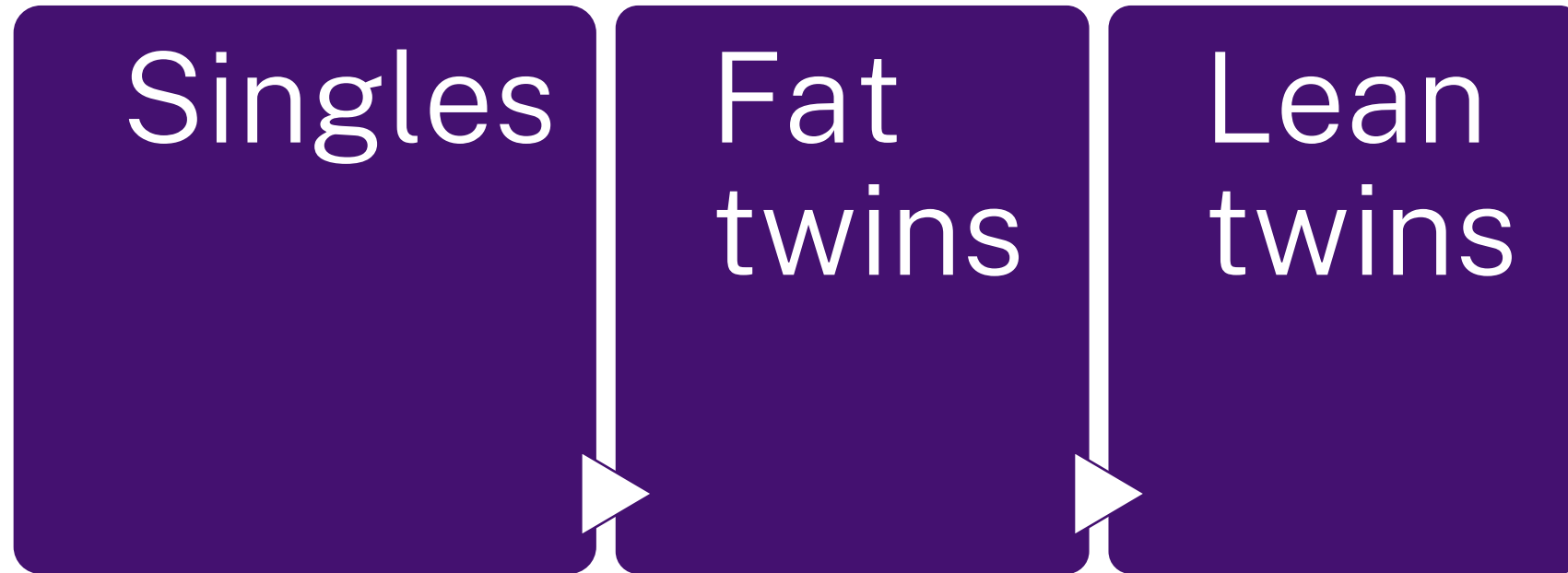


Multiples a lot more condition.
Singles need a bit more condition.

All ewes like this are fine, maintain

Multiples feeling like this risk pregnancy toxaemia
Singles like this risk dystocia

Pre-lambing management – condition scoring



EID will help a great deal with the process to scan and score

You still have all your grass, and all your ewes are going to eat it. Don't panic, prioritise.

Pre-lambing management – nutrition

Single ewes require 75% more energy than empty ewes

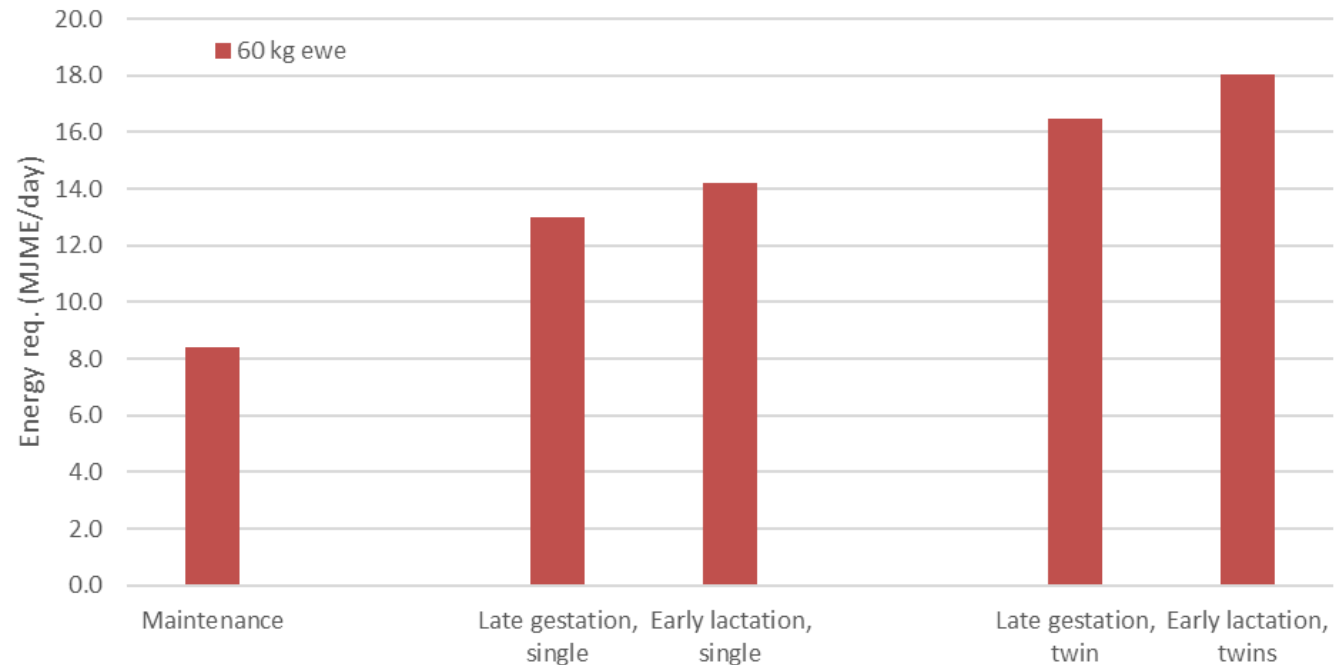
Twin ewes require 25% more than twins



Drought Feed Calculator 4+
NSW Department of Primary Industries
Designed for iPad
★★★★★ 3.7 • 6 Ratings
Free



Drought & Supplement Feed Calc 4+
NSW Department of Primary Industries
Designed for iPhone
★★★★★ 4.8 • 5 Ratings
Free



Pre-lambing management – paddock selection

- Singles 800 - 1000 kg DM/ha
- Twins 1500 kg DM/ha + preference high quality, 30% legume. Plan grazing rest.
- Mob size in twins matters, most of the time

Feed on offer	Twin lamb survival effect / 100 ewes fewer	Marking rate change
<400 kg DM/ha + supp.	6%	+12%
1000-2000 kg DM/ha	2%	+4%
>2400 kg DM/ha	0%	0%

Source: Lockwood et al. (2019, 2020)

Pre-lambing management – shelter

- Wind chill index – the energy required to maintain temperature
- Winds >8 km/h + rain is enough in cold environments
- Wind speed reduction increases single survival ~8%, twin survival ~ 15%
- Low birthweight lambs most susceptible, not exclusive; breed differences are apparent
- Native shelter plantings were encouraged on poorer soils. Reveg up to 34% still profitable

Pre-lambing management – predation

- Predation rate is an outcome of predator-prey ratios
- Fox density – 4/km
- Pigs – 2/ km²
- Eagles – 5-10% of diet is lamb, rarely 10% of deaths, just visible



Any questions?

Selection to improve lamb survival

Ewe selection – udder inspection, culling fail to rear rules

Ram selection – breeding values and birth type-rear type

Barriers to improving lamb survival

31% of Aust. sheep producers identify litter size (pregnancy scanning)

Source: Howard & Beattie (2018). MLA Report. E.AWW.1501

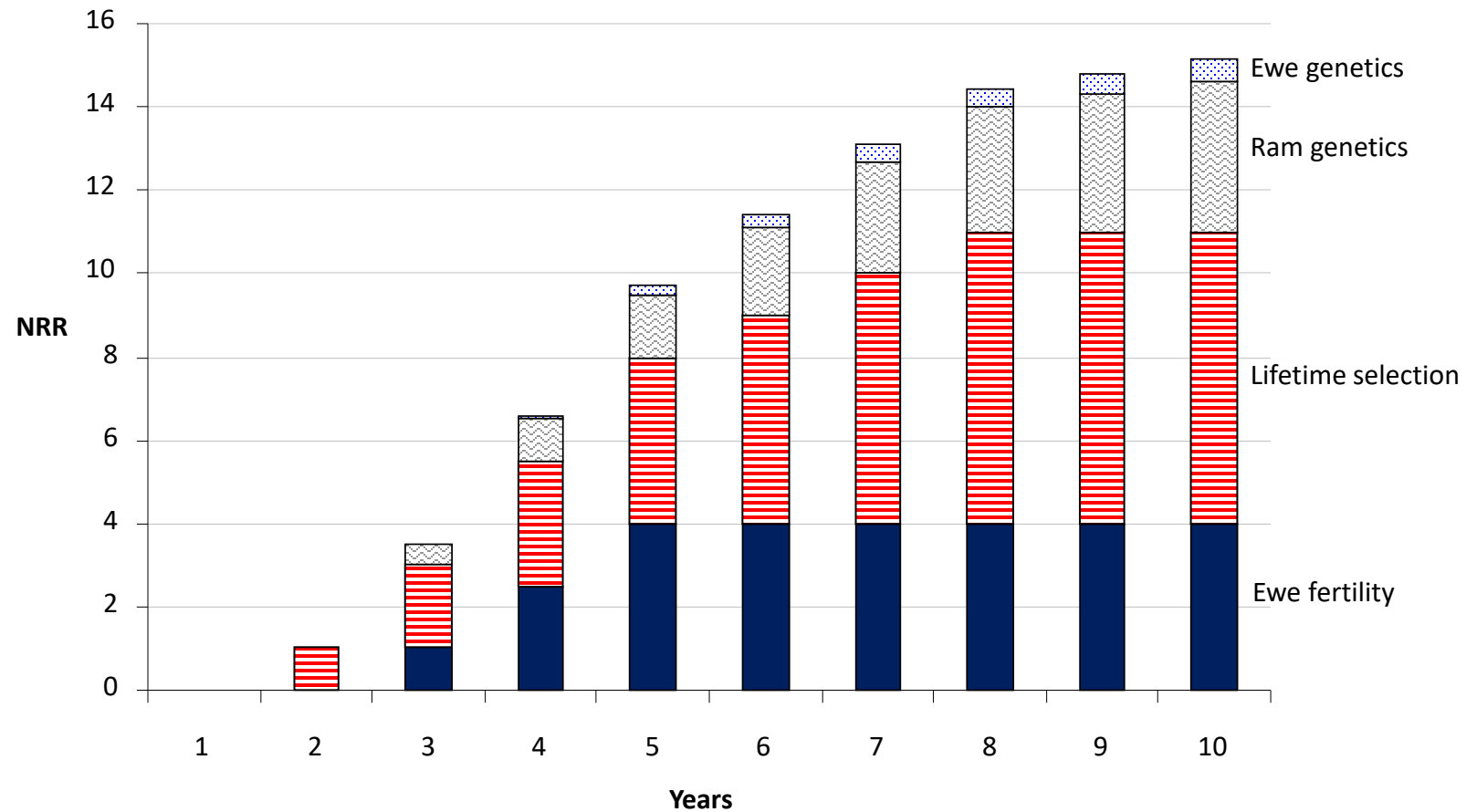
33% of NSW producers do wet/dry udders

Source: Hobbs & Mounter (2023). Animal Prod. Sci.

But, 25% of ewes rear 8% of lambs

Source: Lee et al. (2009). Animal Prod. Sci.

Selection to improve lamb survival



Selection to improve lamb survival

Wet and dry the udder at marking

Strip the teat and look for white milk

Class for teat faults (bottle teats, blind teats)

Class the udder (too small, too deep past hock)

Differentiate dry from lambled and lost

Identify fail to rear ewes



How to check ewes for wet and dry udders

YouTube · NSW DPI Agriculture
24 Apr 2013



Selection to improve lamb survival

Philosophy of culling and selection

Different for self-replacing systems vs replacement purchase system

Different for accelerated lamb systems

Depends on how many fail to conceive or rear & your whole-flock weaning rate

Patience increases accuracy of selection and culls fewer ewes

Wean rate (NLW/EJ)*	Dry first time	Dry second time
< 100%	Retain	Cull
>100%	Cull	Cull

* NLW/EJ = number of lambs weaned per ewe joined

Selection to improve lamb survival

Ram selection

To improve weaning rates and lamb survival, only buy rams BTRT22

Heritability of lamb survival (0.01-0.03)

Select directly for reproduction = faster genetic gain

Selection to improve lamb survival

Genetic trait ASBV	Trait	Notes
ERA	Ewe rearing ability	Emphasise
BWT	Birthweight	Not -ve, use LE if high
MBS	Maternal Behaviour Score	Heritable
LE	Lambing ease	V. useful, not enough data
GL	Gestation length	Will be useful with LE & +ve BWT

Heavily emphasised traits EMD and FAT no strong correlation to survival but include them for carcass, and FERT and Litter Size

Survival of newborn lambs

Trouble-free birth, adequate birth weight

Vigorous lamb; quick to its feet and seeking milk

High quality, low viscosity colostrum, good udder and teat structure

Good mothering ability to ensure all lambs get milk, clean umbilical cord

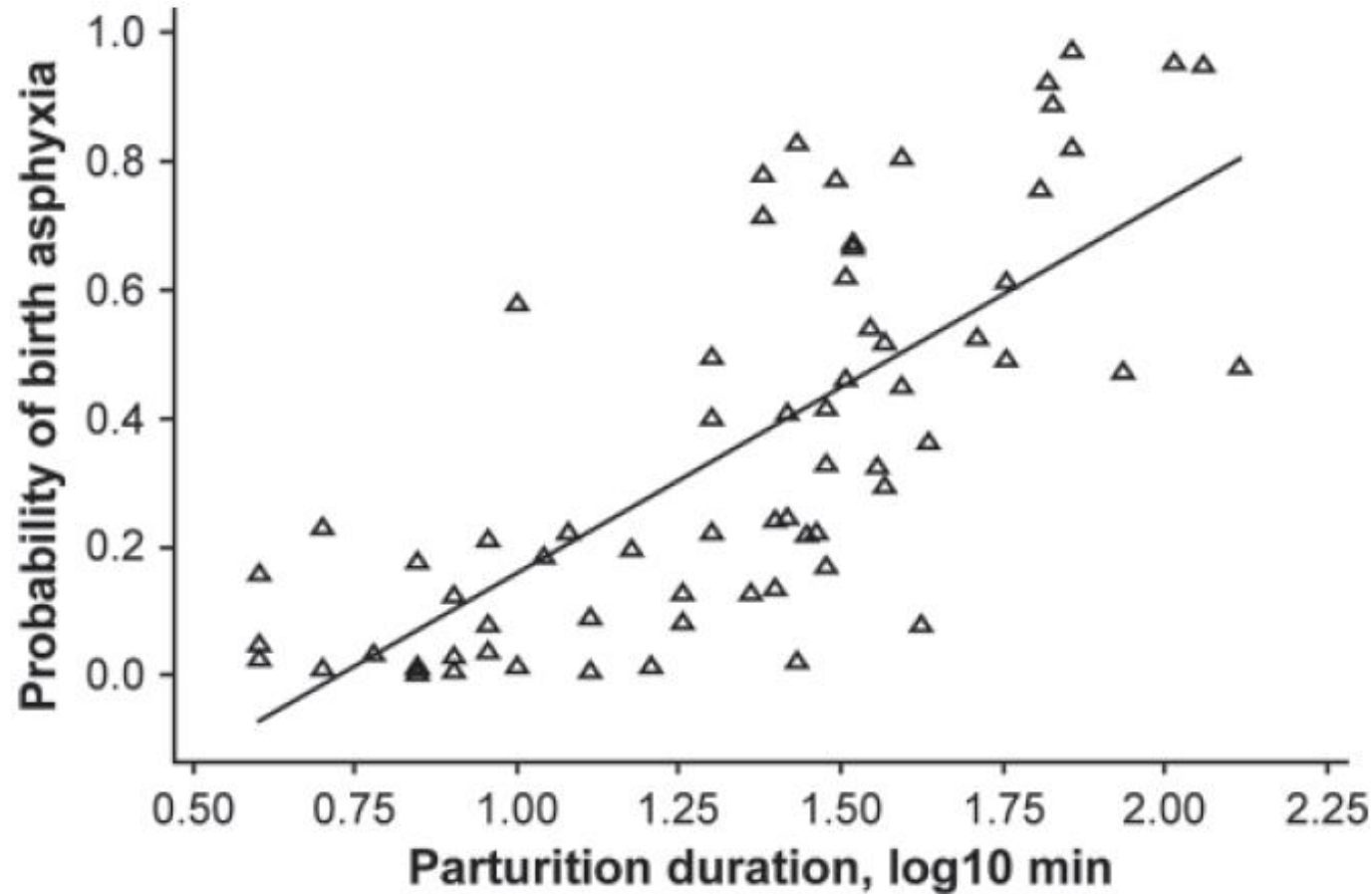
Low predator density, appropriate mob size, adequate nutrition

Appropriate shade/shelter for the time of year

Thus:

BCS, FOO, supplementary feedstuffs, mob size, shelter, dam selection (your data), sire selection (ASBVs, BTRT 22)

Time taken to give birth



Take home messages

Most lamb losses are dystocia or starvation, mitigated through mgmt. & selection

Pregnancy scan for multiples

Wet/dry udders at marking

Participate or refresh your training in LTEM or T90



