Turning reproductive potential into reality

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What sets the top performers apart

- What wasn't different
  - Similar wool price and productivity

- What set them apart
  - Higher stocking rate (+7%)
  - Higher lambing % (+10%)
  - Higher price for surplus sheep (+10%)
  - Leading to a significantly higher profit from livestock trading (80% of difference)

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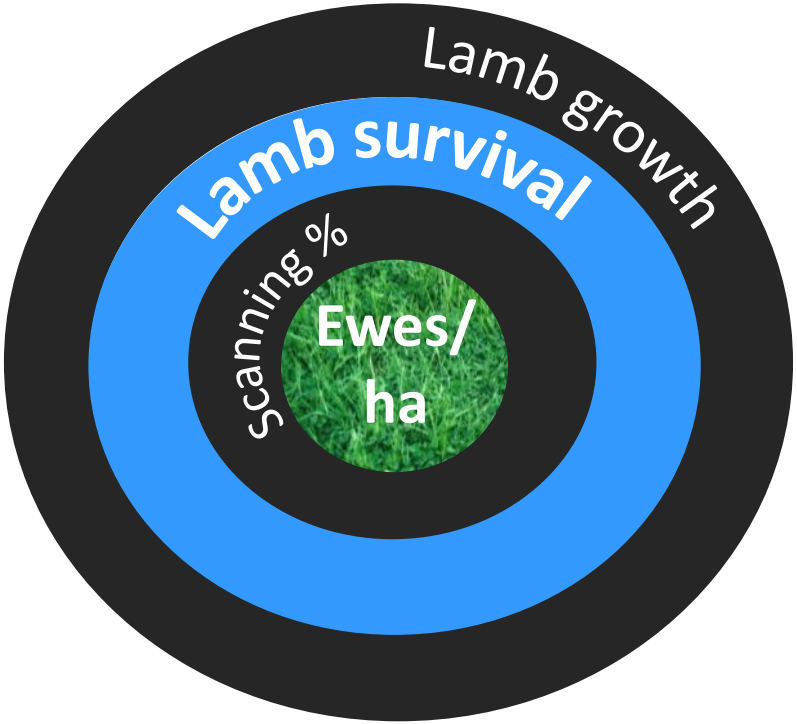
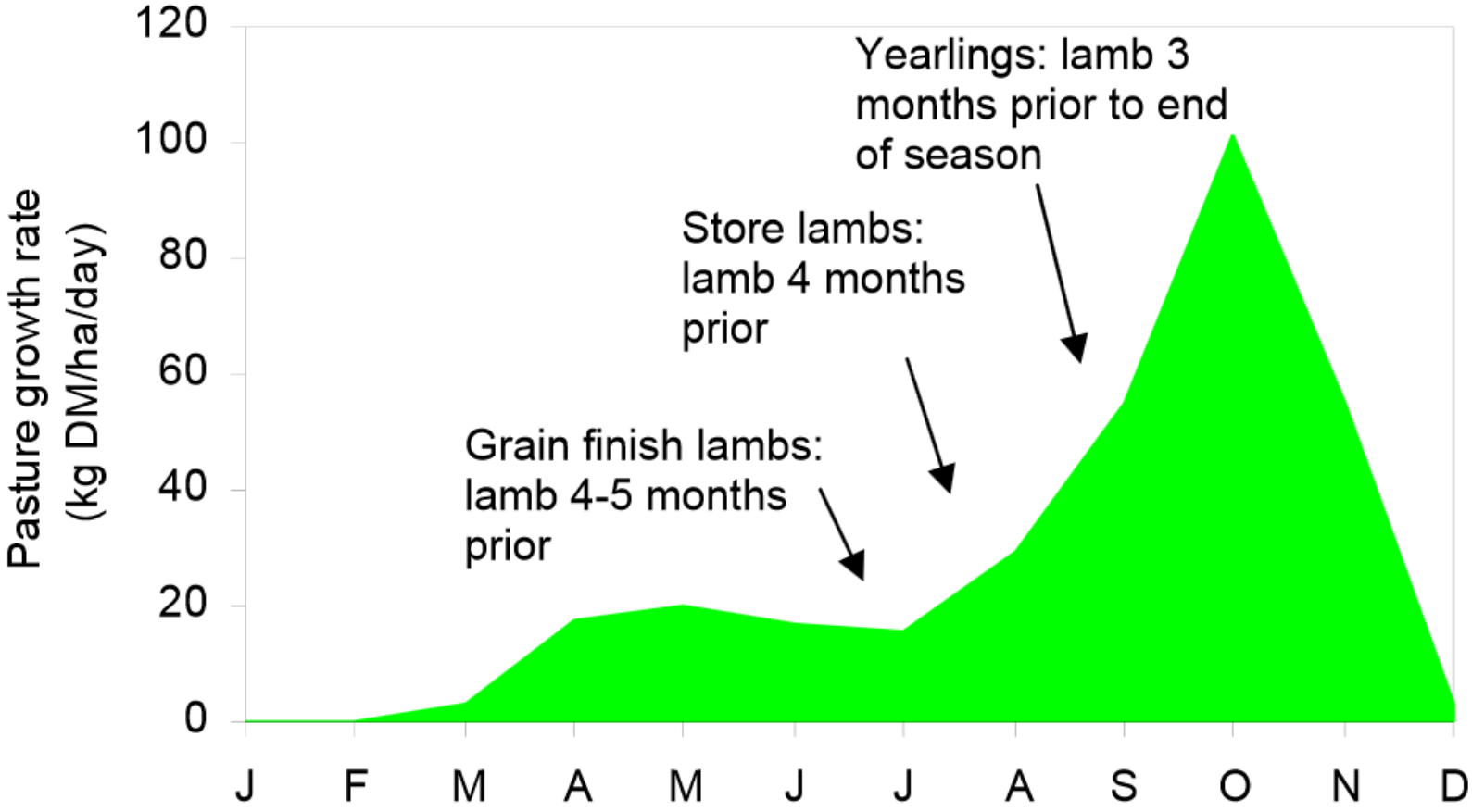
Growing your flock-



More lambs
More Kilos
(Kg lamb weaned/ha)


Pasture growth rate (kg DM/ha/day)
120
100
80
60
40
20
0
J
F
M
A
M
J
J
A
S
O
N
D
Yearlings: lamb 3 months prior to end of season
Store lambs: lamb 4 months prior
Grain finish lambs: lamb 4-5 months prior

Lower quality pasture – energy and protein levels are decreasing

Grass dominant (late Spring) – approximately 8.0 MJME/kgDM and 18% protein

Source: Lifetime Wool, Feed on Offer Photo Gallery 2007

High quality pasture – highly digestible, energy and protein levels high

Grass/clover mix (Spring) – approximately 12 MJME/kgDM and 27% protein

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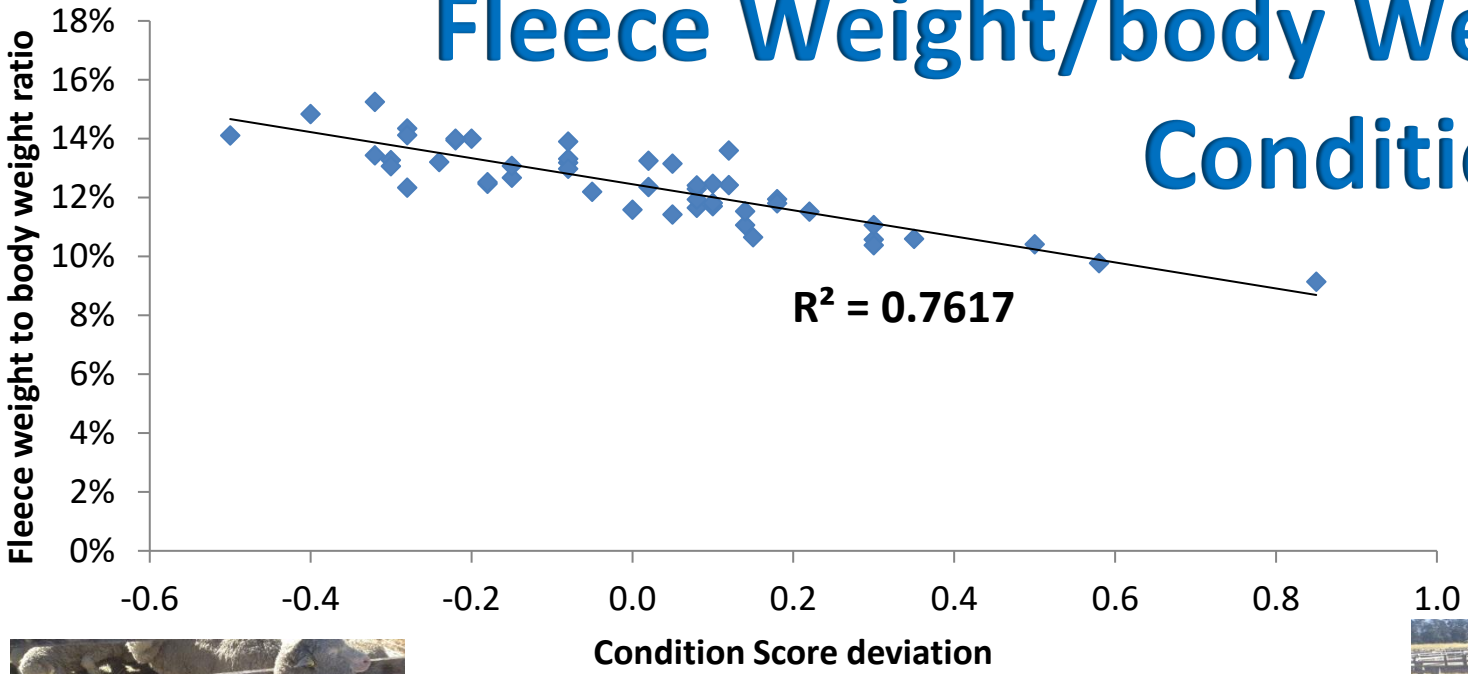
60 kg ewe with twins

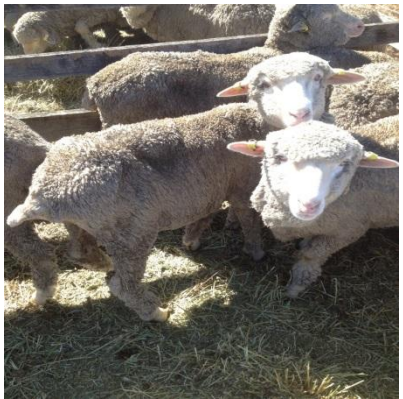
Lactation day 10 requires 27 MJ/ day

Grazing 1500 kg dry matter

Low Quality	High Quality
<5 % Legume 65 % Digestible	30% Legume 75 % Digestible
15 MJ/day	25 MJ/day
Loss of 0.9 CS in 30 days	Loss of 0.3 CS in 30 days

Fleece Weight/body Weight v Condition score





Source: Peter Westblade Memorial Merino Challenge

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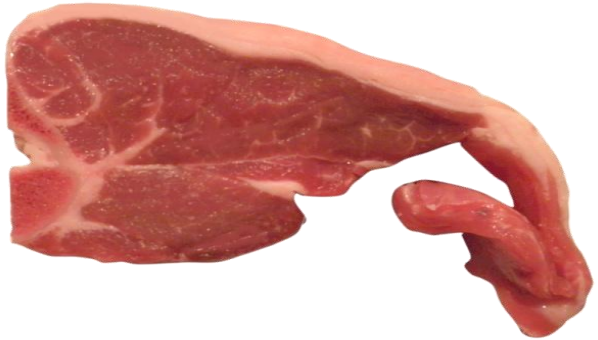
Genetics and Condition score

The actual condition score of a sheep is governed by

25% genes and 75% environment



Genetic trait now available and…….

There is a strong correlation with YFAT and YEMD

Ewe performance annual stock-take

What percentage of the ewes you join rear a lamb (s)?

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Ewe performance stocktake- current

Ewe status- annual stocktake	Average (%)	Per 1000 ewes
Ewes that scan dry	10%	100
Ewes that die	6%	54
Ewes scanned single that don't rear	15%	83
Ewes scanned multiples that don't rear	18%	82
		(319)
Number of ewes that rear a lamb (s)		681
Percent ewes joined that rear lamb(s)		**68%**

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Ewe performance stocktake- potential

Ewe status- annual stocktake	Average (%)	Per 1000 ewes
Ewes that scan dry	3%	30
Ewes that die	2%	20
Ewes scanned single that don't rear	5%	28
Ewes scanned multiples that don't rear	8%	37
		(115)
Number of ewes that rear a lamb (s)		885
Percent ewes joined that rear lamb (s)		**89%**

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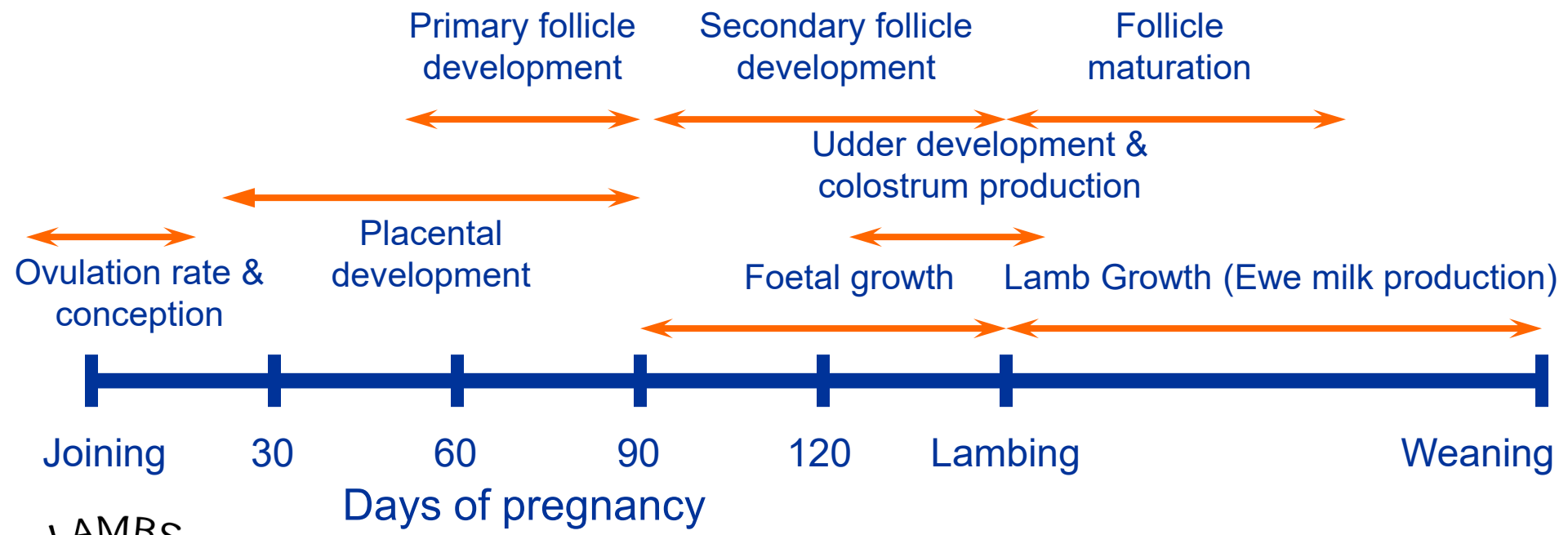
Ewe nutrition drives flock growth



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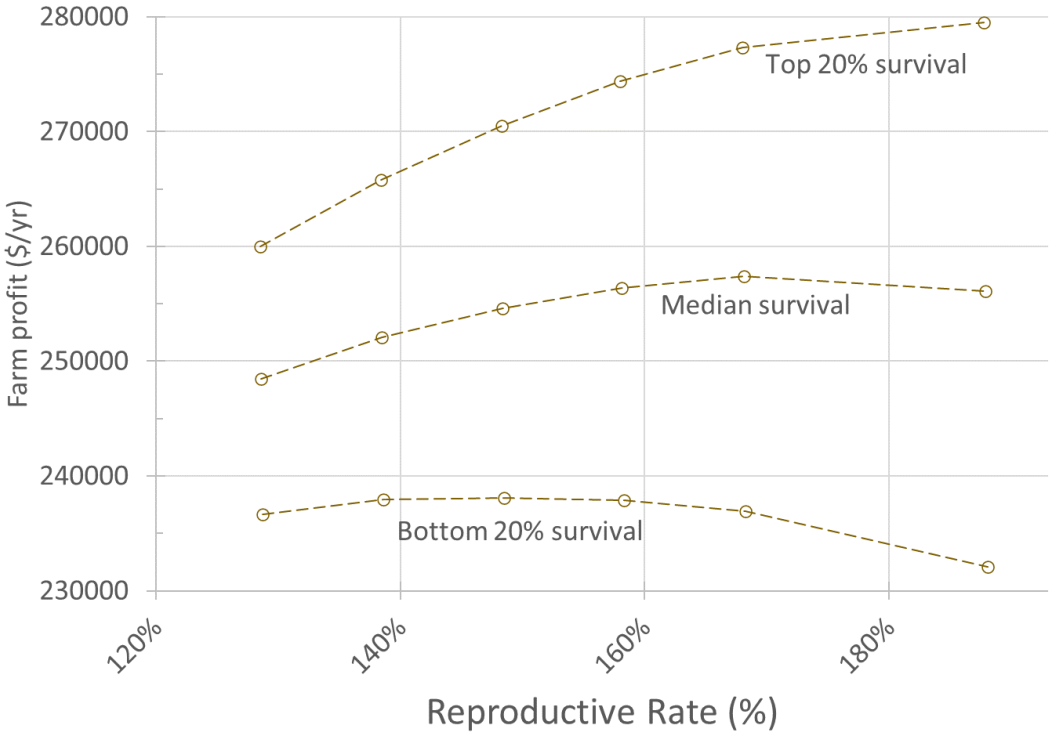
Lifetime Ewe Management

more lambs, better wool, healthy ewes

Careful what's slipping through your fingers



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90

Lambs marked

130 Foetuses

Single survival-85%

Twin survival -60%

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Lambs Loss 30%

114

Lambs marked

130 Foetuses

Single survival- 95% (up from 85%)

Twin survival- 80% (up from 60%)

Lambs Loss 12%

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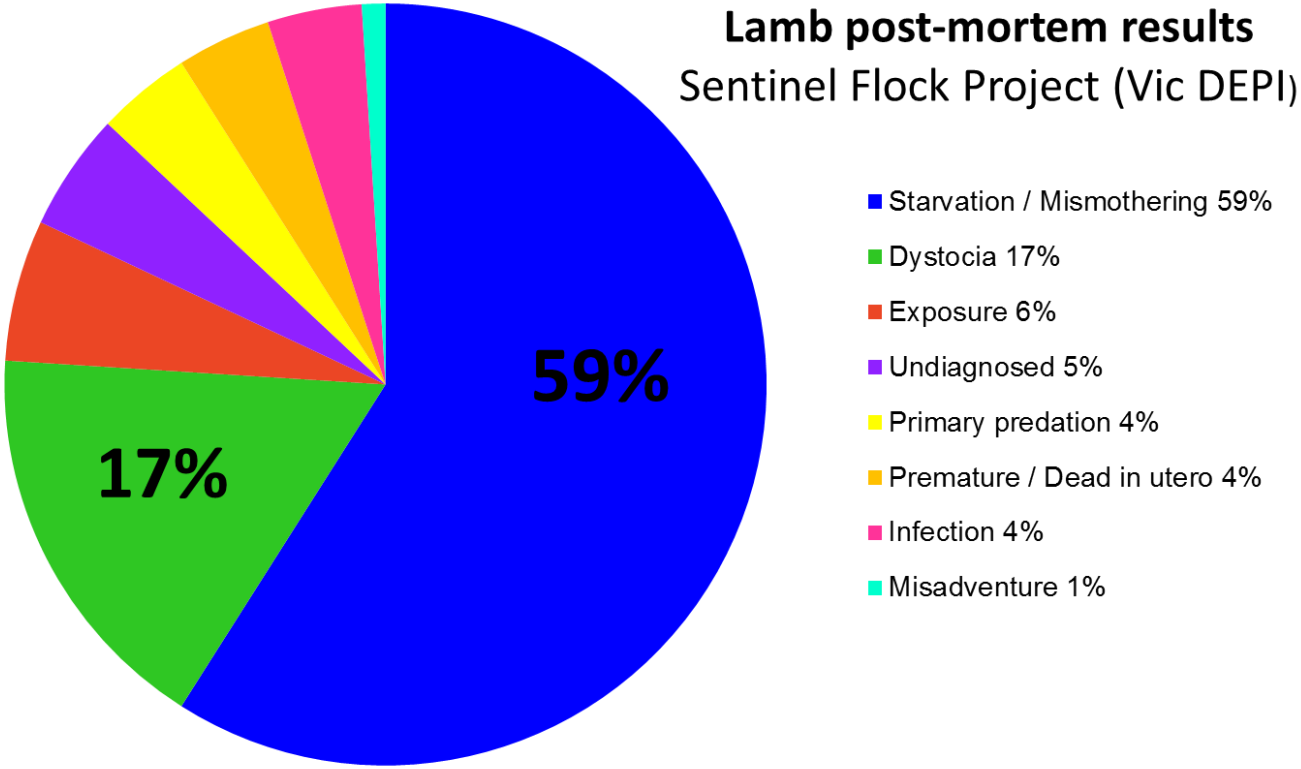
Value of going from more lamb loss to core lamb loss

$1 Billion in profit from saving 8 million lambs

Ewe Breed	Single ($ m)	Twin ($ m)	Triplets ($ m)	Total ($ m)
Merino	190	488	19	697
Maternal	34	259	16	309
	224	747	35	**1006**

Must allocate feed to meet need OR?



You will have a high lamb and ewe loss!

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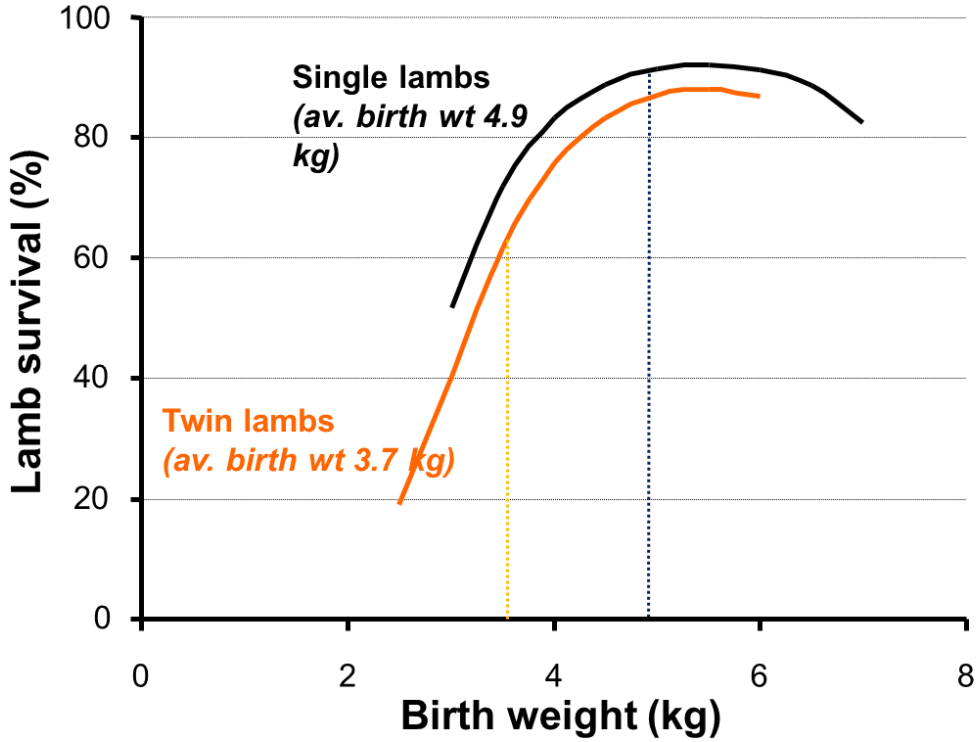
Birth weight affects survival- Merinos



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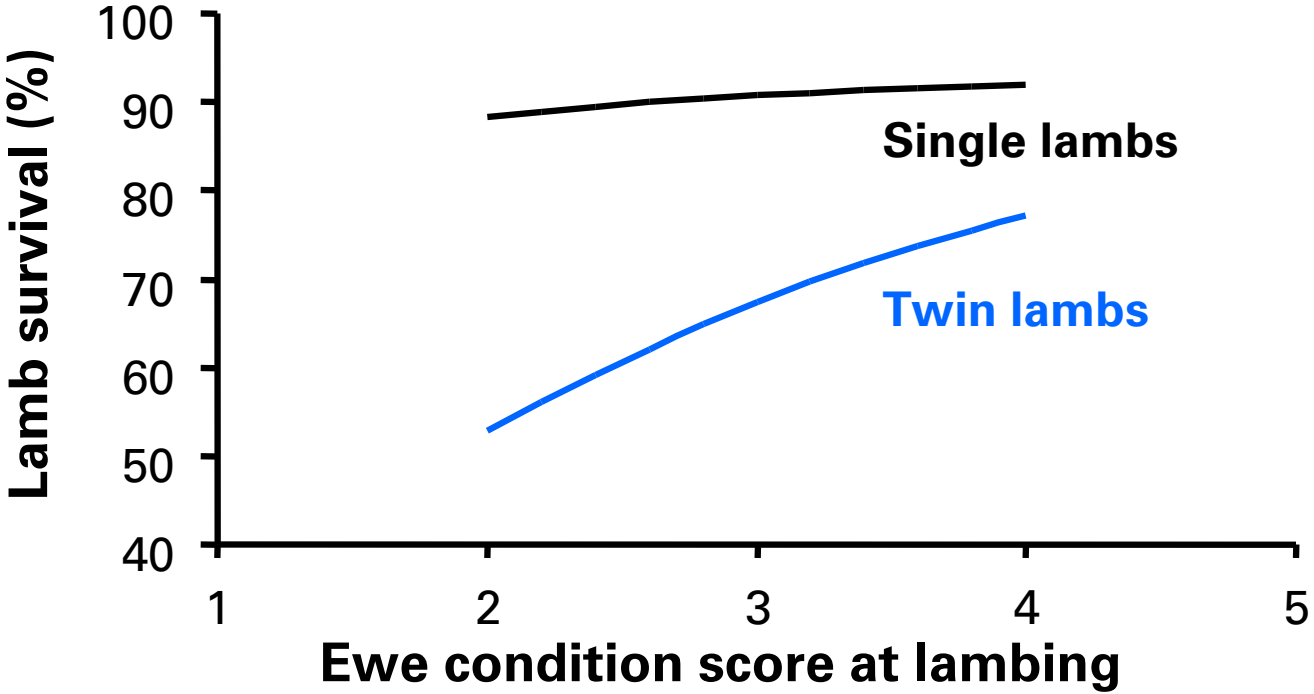
Source: Oldham *et al*. 2011

Lifetime Ewe Management
more lambs, better wool, healthy ewes

Preferentially allocate feed to twins



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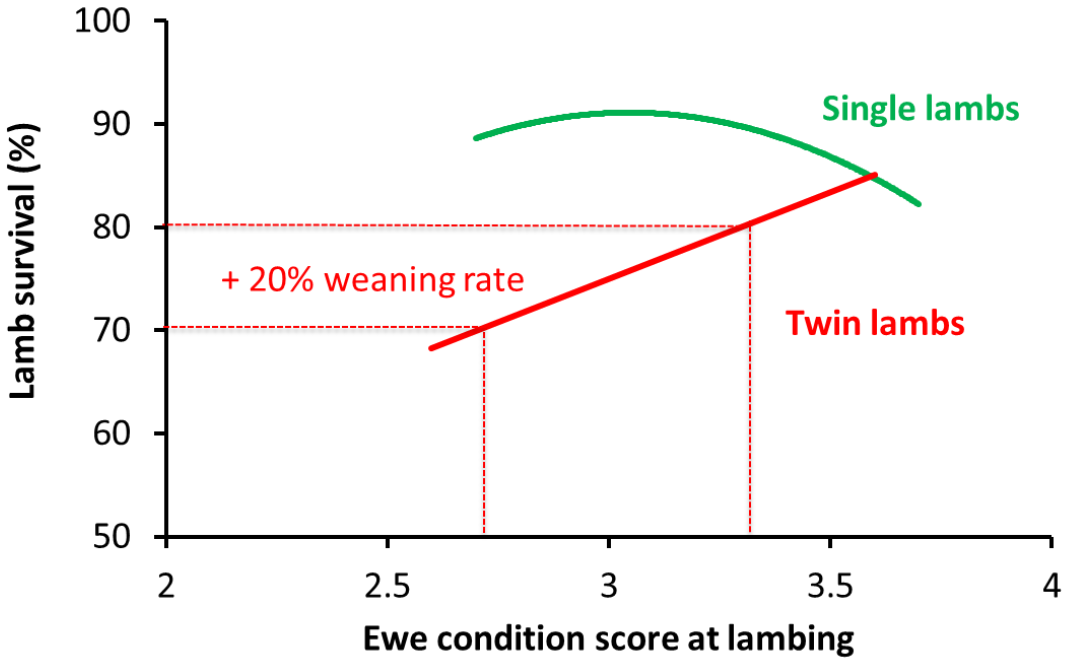
Lifetime Ewe Management

more lambs, better wool, healthy ewes

Ewe condition score profile and lamb survival- Maternals

- Preferentially allocate feed to twins just like Merinos
- Differential management is much more that just ewe nutrition



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Condition targets at lambing

Litter size	Merino ewes	Maternal ewes
Single	3.0	3.0
Twin	3.3	3.5
Triplet	3.5	3.5^{+}

Impact of join weight and pregnancy weight gain on twin lamb survival (%) from ewe lambs

	Live-weight change (kg) during pregnancy					
	5	10	15	20	25	30
Join wt (kg)						
35			<20	<20	35	49
40	<20	31	45	58	67	74
45	47	59	68	75	78	81
50	65	72	77	80	82	84
55	72	77	80	82	84	84
60		78	80	82	84	
65		78	80	82		

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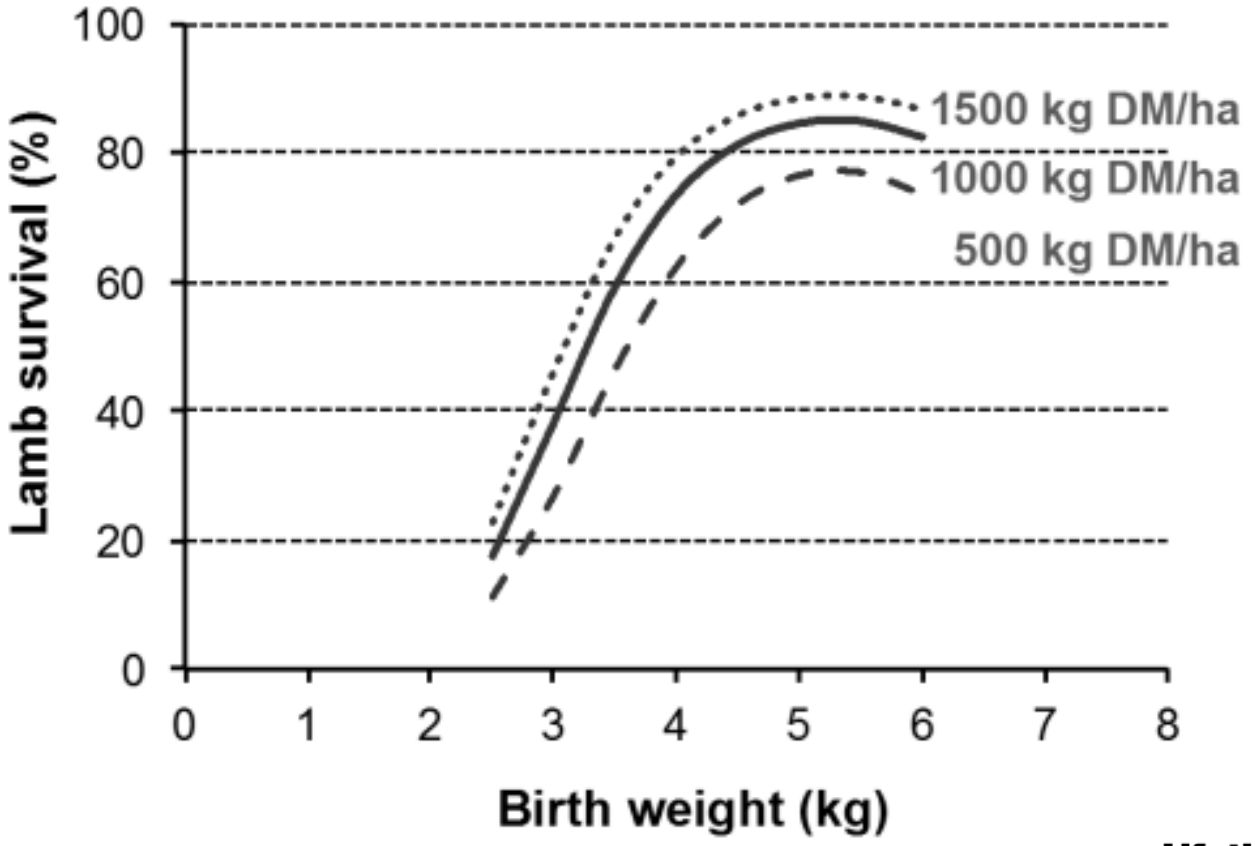
The lambing paddock (nursery) must provide:

- Adequate feed and water
- Freedom from predators
- Shelter
- Privacy
- Minimal disturbance

Feed-on-offer affects maternal behaviour



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Lifetime Ewe Management

more lambs, better wool, healthy ewes

Chill Index

Sheep cold stress index Nixon-Smith (1972)

$C = (11.7 + 3.1\ v0.5)(40 - T) + 481 + 418(1\text{-}e\text{-}0.04R)$ (1)

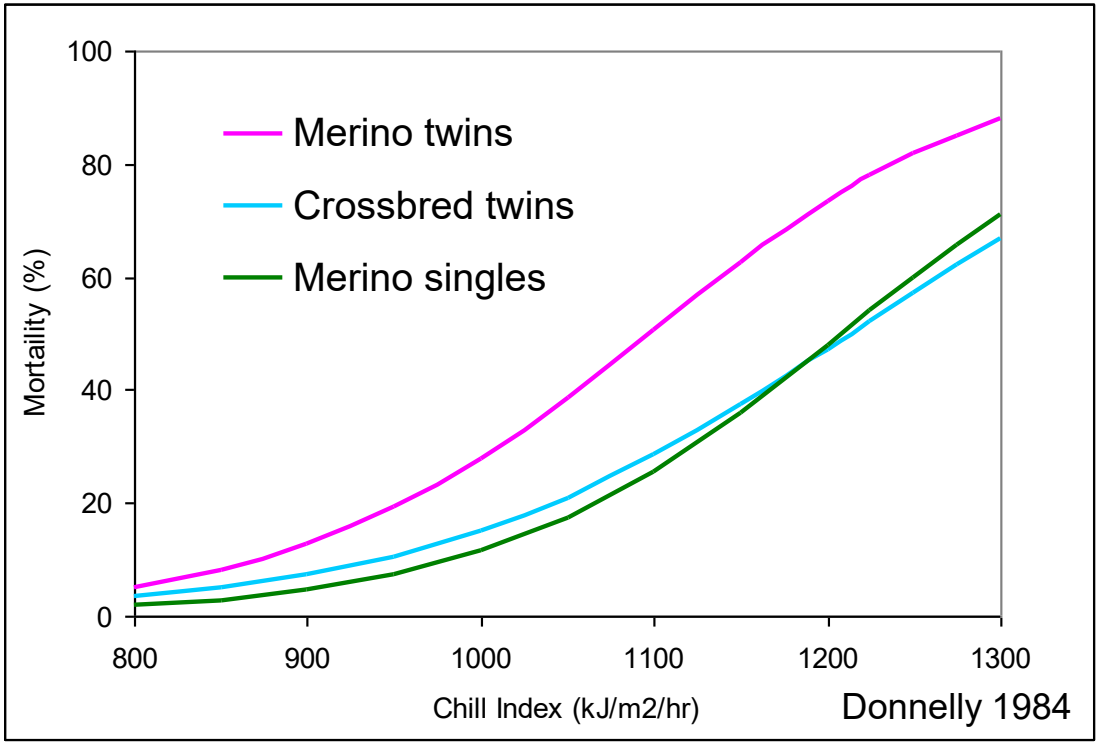
C is the **potential heat loss** (kJ/m2/hour)

v (m/s) is the **wind velocity** at 40 cm over the previous hour

T (°C) is the average **temperature** over the previous hour at 2 m

R (mm/day) the **rainfall** received over the previous 24 hours.

Chill Index Related to Probability of Death



Key Messages for Shelter

- Shelter significantly improves survival in colder months
- Effective shelter is mainly about reducing windspeed
- Shelter is of most benefit to twins and triplets
- Shelter benefits to twins estimated worth at $10/ewe
- Make the best use of existing shelter - trees, shrubs, landscape

Table: Lamb survival matrix

Ewe CS at lambing	FOO at lambing	Chill index					
		Single			Twin		
		900	1000	1100	900	1000	1100
2.0	500	94%	86%	71%	74%	54%	32%
	800	96%	90%	77%	80%	62%	39%
	1100	97%	92%	82%	84%	68%	46%
	1500	97%	94%	85%	87%	73%	52%
2.3	500	94%	87%	73%	78%	58%	36%
	800	96%	90%	79%	83%	66%	44%
	1100	97%	93%	83%	87%	72%	51%
	1500	98%	94%	86%	89%	77%	57%

Putting it into action:

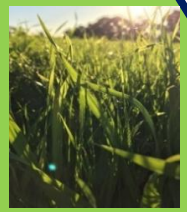
- Prioritise small paddocks for twins
- Capitalise on benefits of increased pasture utilisation
- Subdivision of paddocks or reallocation of mobs

Reduce mob size

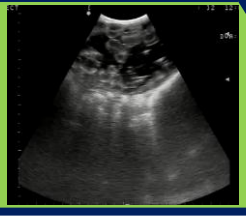
Lift twins marking rate by 5%
Lift singles marking rate by 1%

Paddock & resource allocation

Manage singles & twins separately



Pregnancy scan for multiples



Lift ewe survival by up to 50% and lamb survival by 10% +

Optimum mob size at lambing for ewe lambs

	Singles	Twins	
DSE/ha	Adults	Adults	
Optimum Mob Size			
2.1	210	89	60%
4.2	193	80	60%
8.4	178	72	61%
14.7	168	67	63%

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Optimum mob size at lambing for ewe lambs

	Singles			Twins		
DSE/ha	Ewe Lambs	Adults	Prop'n	Ewe Lambs	Adults	Prop'n
Optimum Mob Size						
2.1	107	210	51%	53	89	60%
4.2	93	193	48%	48	80	60%
8.4	82	178	46%	44	72	61%
14.7	77	168	46%	42	67	63%

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Optimum mob size- it depends!

	Stocking rate (DSE/ha)	Merino		Maternal	
		Twin	Triplet	Twin	Triplet
Optimum mob size	2.1	109	36	87	23
	4.2	96	33	78	21
	8.4	85	30	70	20
	14.7	80	28	66	19

Scenario: permanent subdivision, meat price at $7/kg for lamb and a 5% minimum return-on-investment

Lamb marking is your yield mapping day

- Mark mobs in lambing mobs (don't box up)
- Collect good data (count all lambs and ewes)
- Record marking result against each paddock
- Identify lambs born as singles and twins (using either a numbered tag or ear notch)
- Wet-dry ewes every year (identify dry ewes)

Take home messages

- Keep your eyes on the real prize- kgs of lamb weaned per hectare
- Must scan & manage differentially- multiples to lamb at least 0.3 CS higher
- Birth weight critical driver of lamb survival- especially at Cooma!
- Pin-point and prepare lambing paddocks well in advance
- Lamb twins in smaller mobs
- Wet-dry ewes annually
- Plan – Do – Review
- Lamb survival is all about attention to detail

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MLA and relevant tools and resources

- Bred Well Fed Well
- Lifetime Ewe Management
- AWI Repro Master Class
- Pasture Paramedic Tool

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