Optimising lamb growth rate from birth to slaughter

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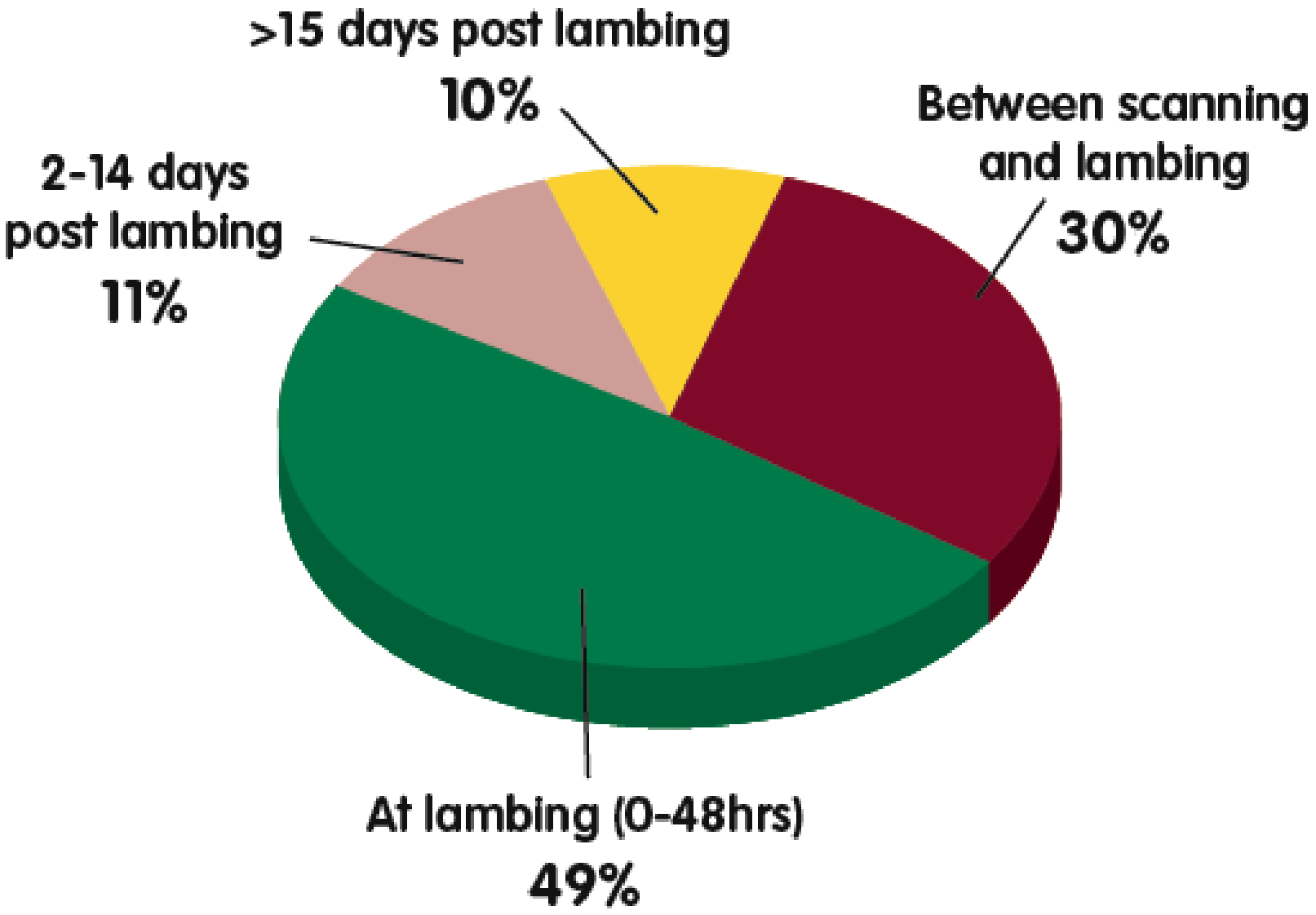
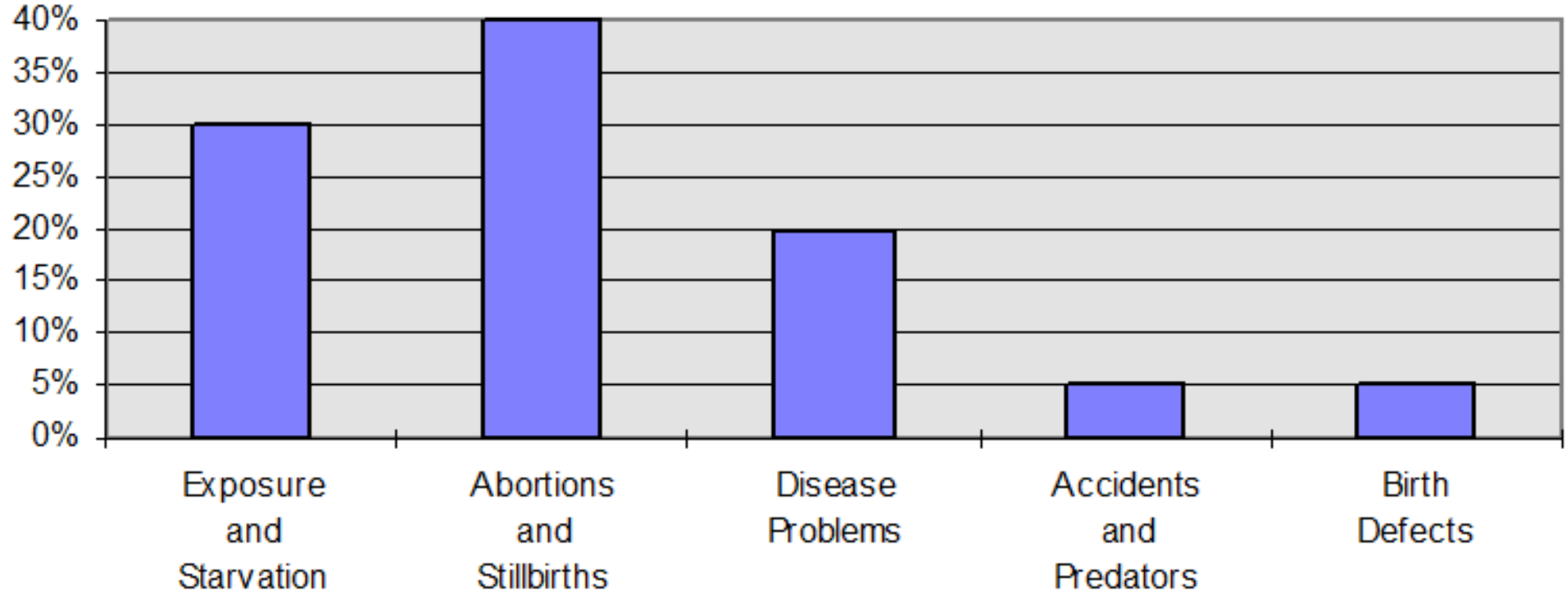
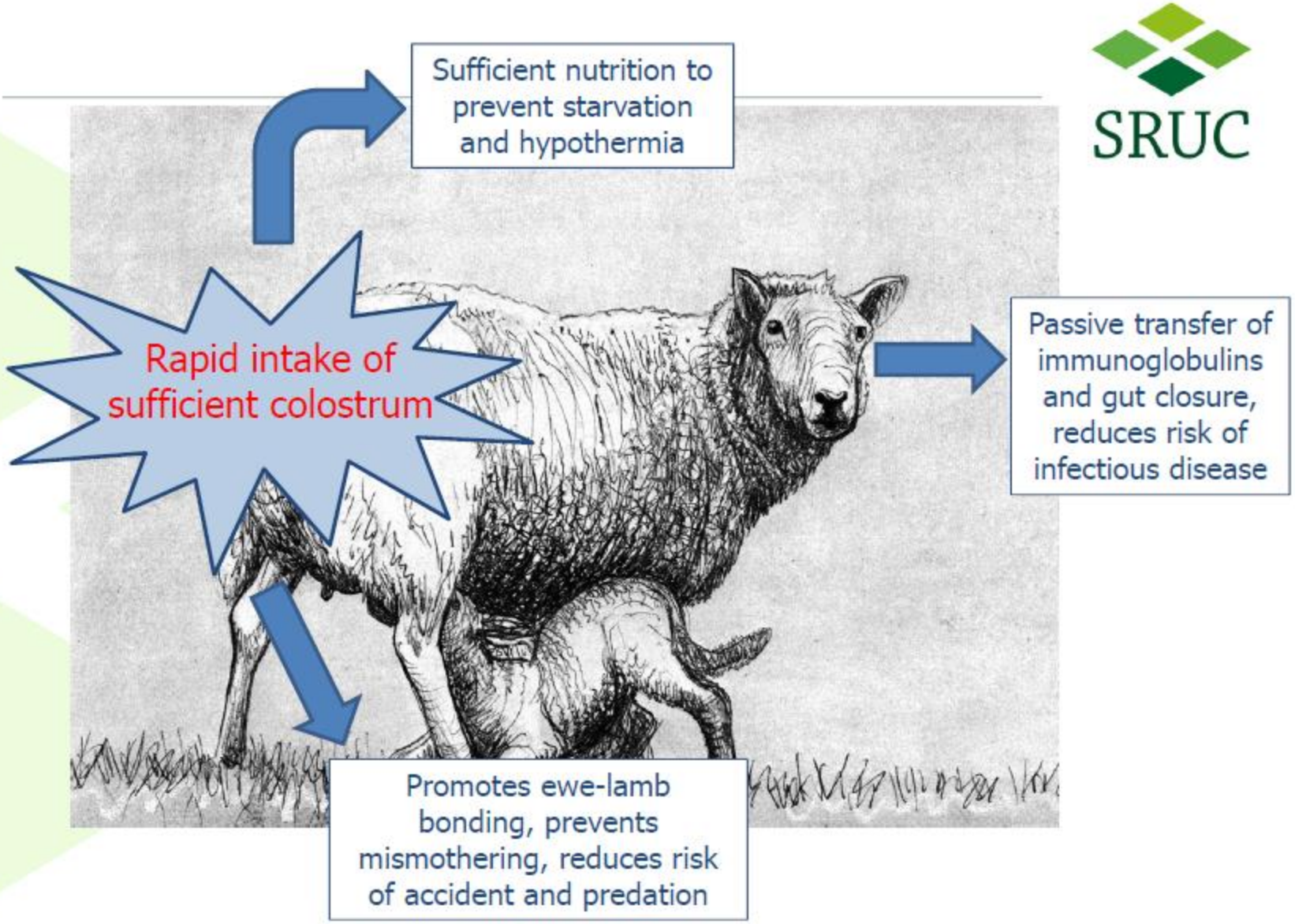
When lamb losses occur (% of total losses)



Source: HCC lambing project 2010/11

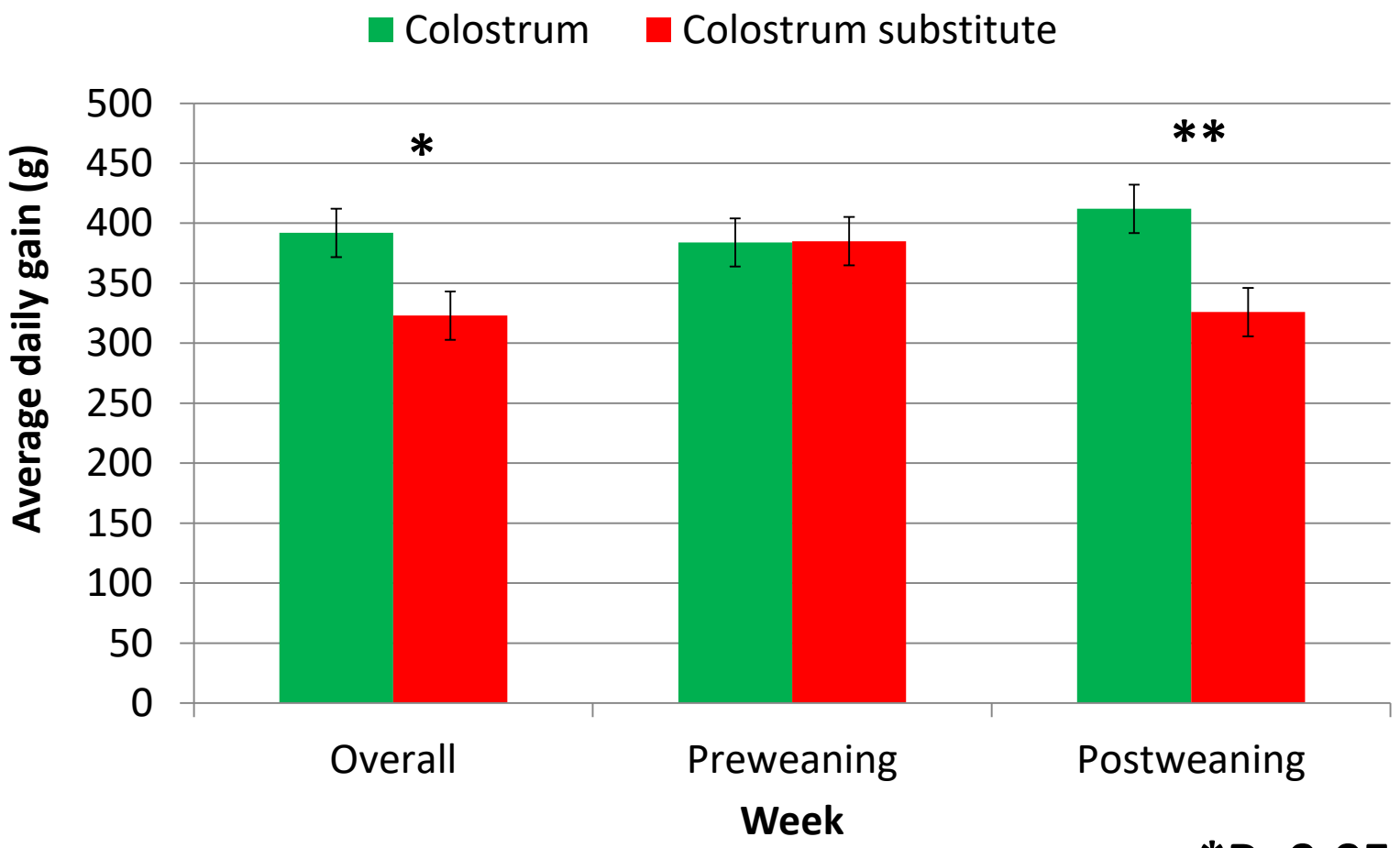
Causes of lamb mortality





Dwyer et al. 2016

The effect of Colostrum on average daily live weight gain from birth to slaughter



***P<0.05**

****P<0.01**

GROWING GREAT LAMBS—KEY PRINCIPLES

Many factors interact to affect lamb growth rate, including ewe body condition, ewe milking ability, pasture quality and quantity, climatic conditions and the genetic ability of the lamb to grow.

If one of these factors is weak or missing, growth rate targets are unlikely to be achieved.

Reference: 400 Plus—A Guide to Improved Lamb Growth for Farmers and Advisors.

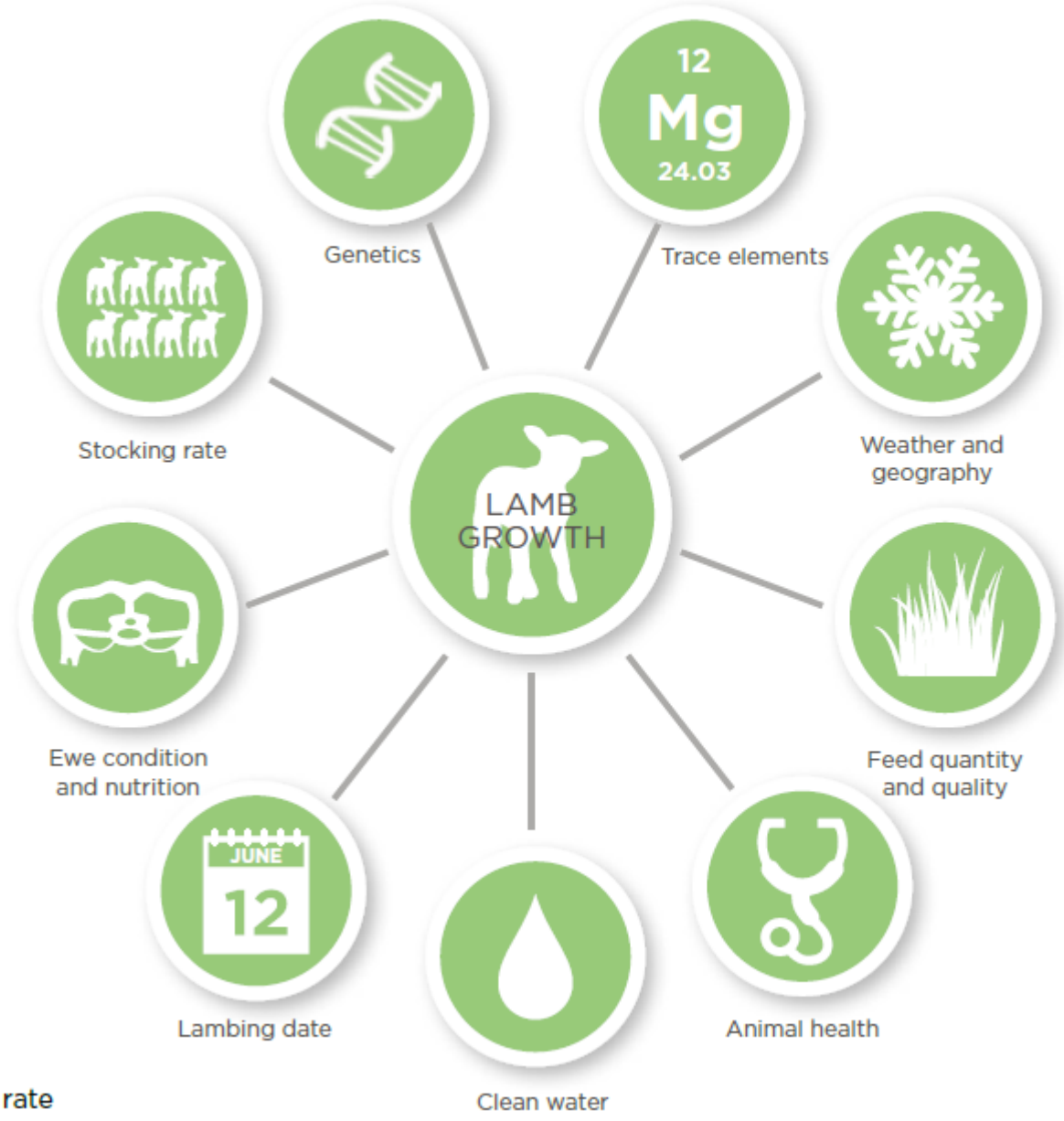


Figure 1. Factors affecting lamb growth rate

Early Lactation

Lactation (ME System)

		Milk Yield (kg/d)					
		1		2		3	
Ewe Liveweight (kg)	Ewe Liveweight Change (g/d)	ME (MJ/d)	MP (g/d)	ME (MJ/d)	MP (g/d)	ME (MJ/d)	MP (g/d)
60	0	15.9	146	24	222	32.5	297
	-50	14.1	140	22.3	216	30.6	291
	-100	12.4	134	20.5	209	28.8	285
80	0	17.9	158	25.9	234	34.3	309
	-50	16.2	152	24.1	228	32.3	303
	-100	14.4	145	22.3	221	30.5	297

Lactation basics

- Milk yield peaks in week 3 (3.5 l/day twins) to 5 (2.3 l/day singles)
- Twins produce about 35% more milk in early lactation and 18% more in late lactation
- Following peak lactation milk production drops by 20-25 grams per day
- Intake does not peak until 6-8 weeks into lactation
- Body reserves must be available for mobilisation in early lactation

Score 3

Score 2

Milk Yield and Lamb Growth

Milk DM : Live Weight Gain in *young lamb* = 1:1
Sheep's milk about 20% DM,

Therefore:-

Single lamb GR x 5 ***OR*** **Twin lamb GR x 10 (5 x 2)**

≅

Ewe Milk Yield (90% accuracy)

e.g. >> **LAMB GROWTH RATES UP TO 6 WEEKS**

(a) Single lamb @ 340g/d = 1.7 kg milk/ewe/d

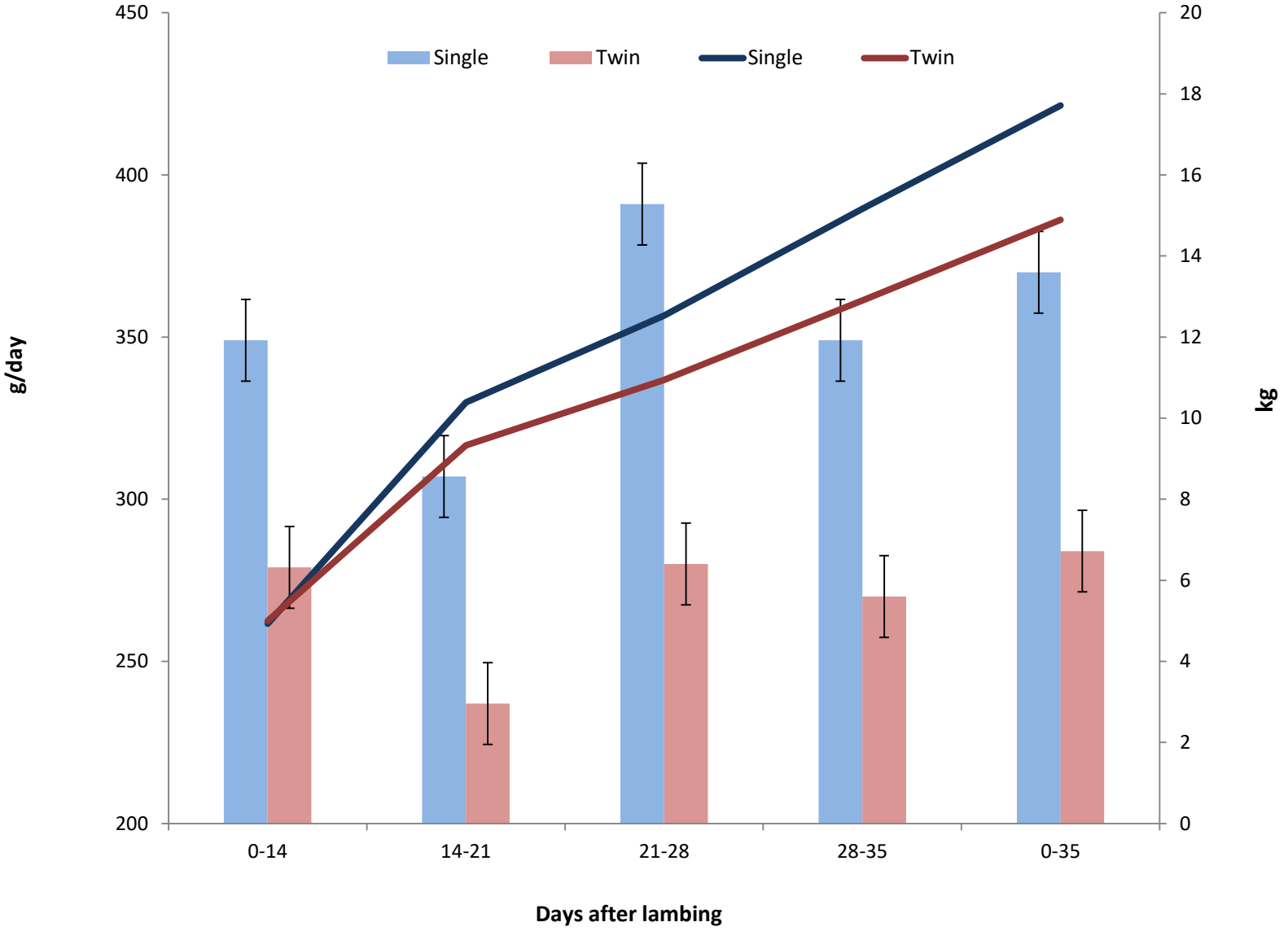
(b) Twin lamb @ 250g/d = 2.5 kg milk/ewe/d

Target Twin Lamb Growth Rates (MSL) -- Grass only

Period	GR (g/d)	Wt (kg)
0 - 5 weeks	300	15
5 - 10 weeks	300	26
10 - 14 weeks	210	32
0 - 14 weeks	275	32
Post weaning	150?	???

NB: Drop in GR after about 10 weeks and again after weaning

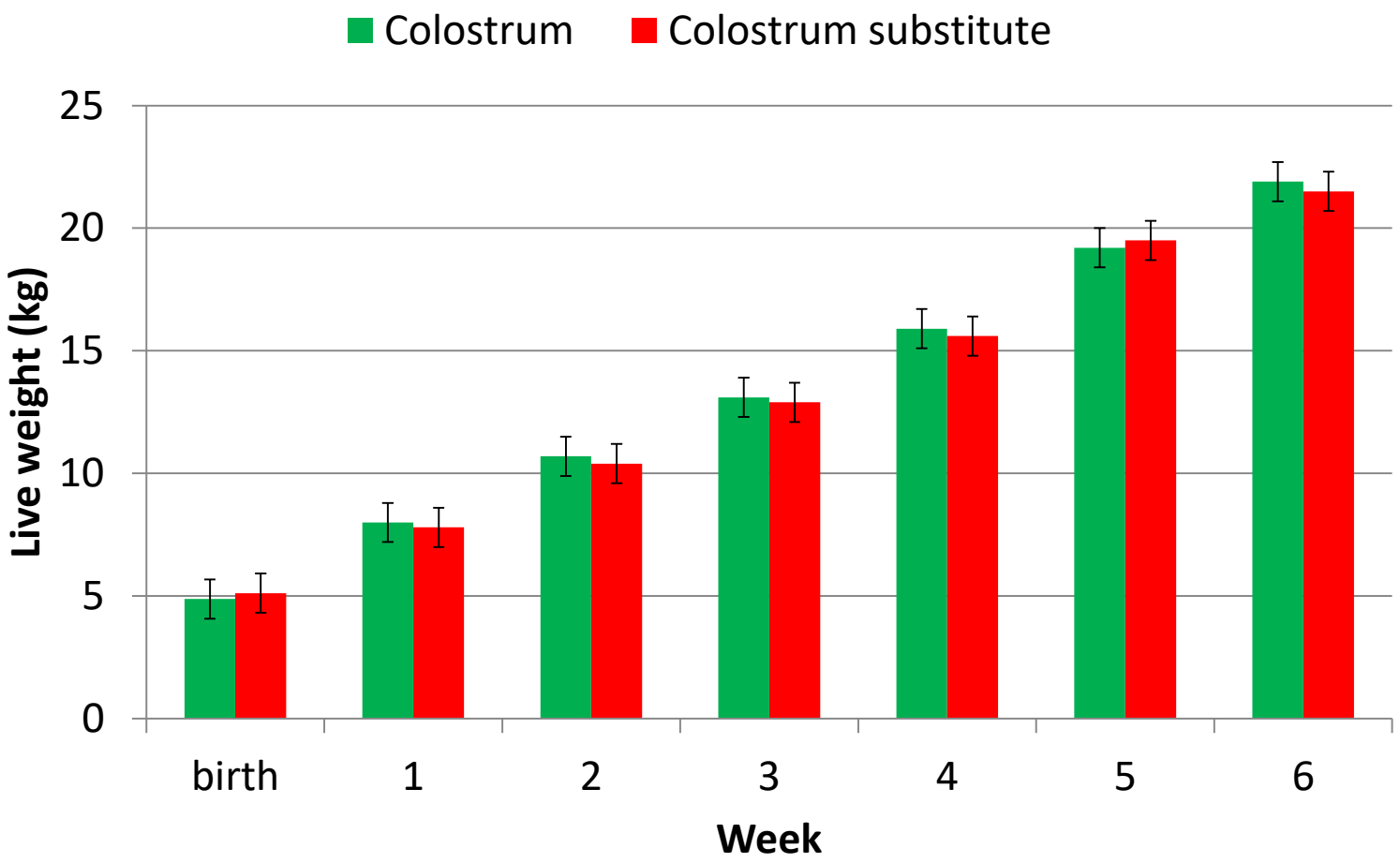
Weight and growth rate of lambs born as twins and reared as single or twin lambs from birth to week 5



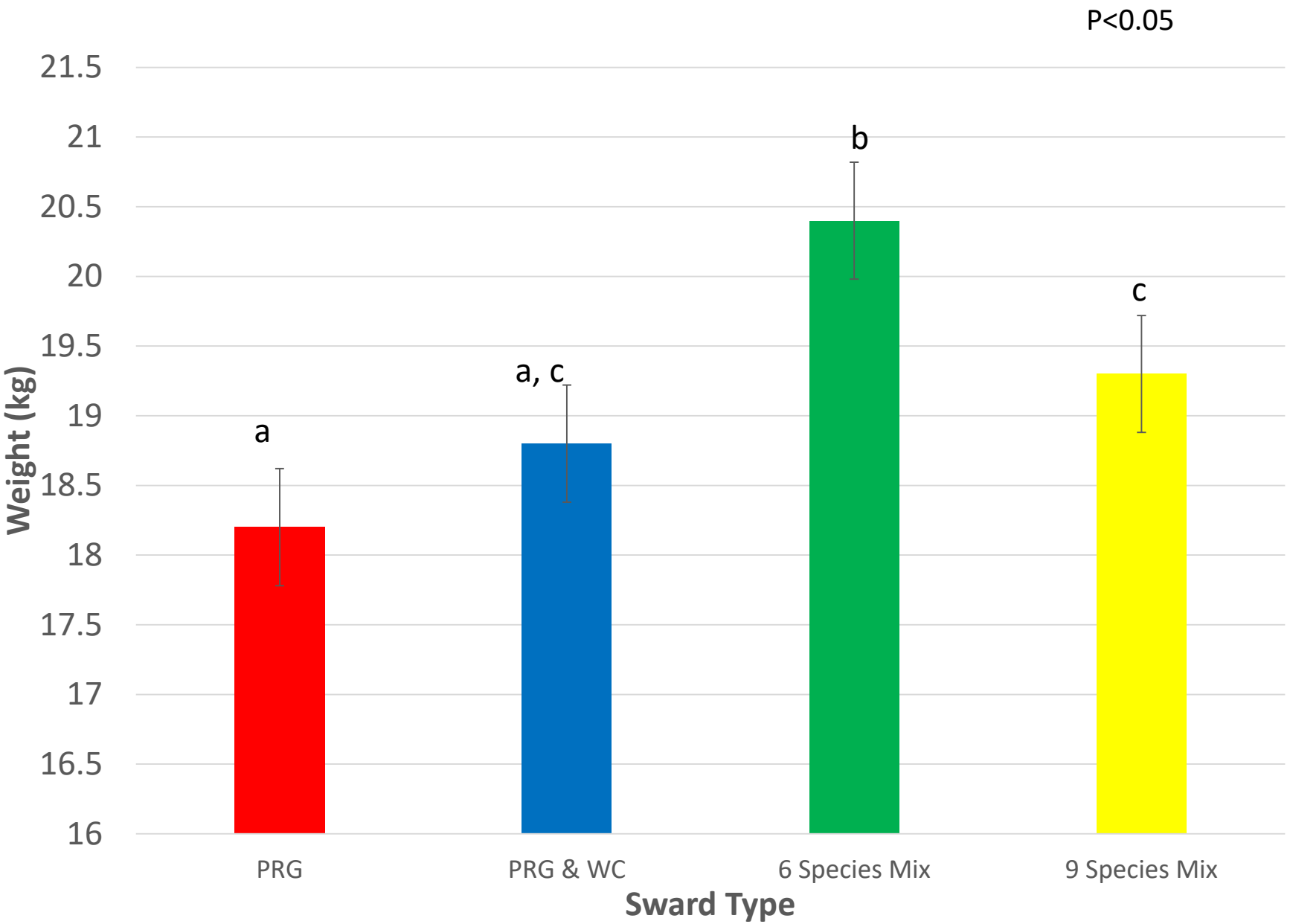
The suckling lamb

- We almost always underfeed the suckling lamb, especially in early lactation
- These lambs can convert DM to LW at 1:1
- Single lambs grow faster than twins at approx. 80gr per day in early lactation and 35 gram per day in late lactation
- Twin lambs only get to consume 68% and 59% respectively of the milk intake of singles in early and late lactation
- Growth rate peaks between day 20 – 40 of lactation

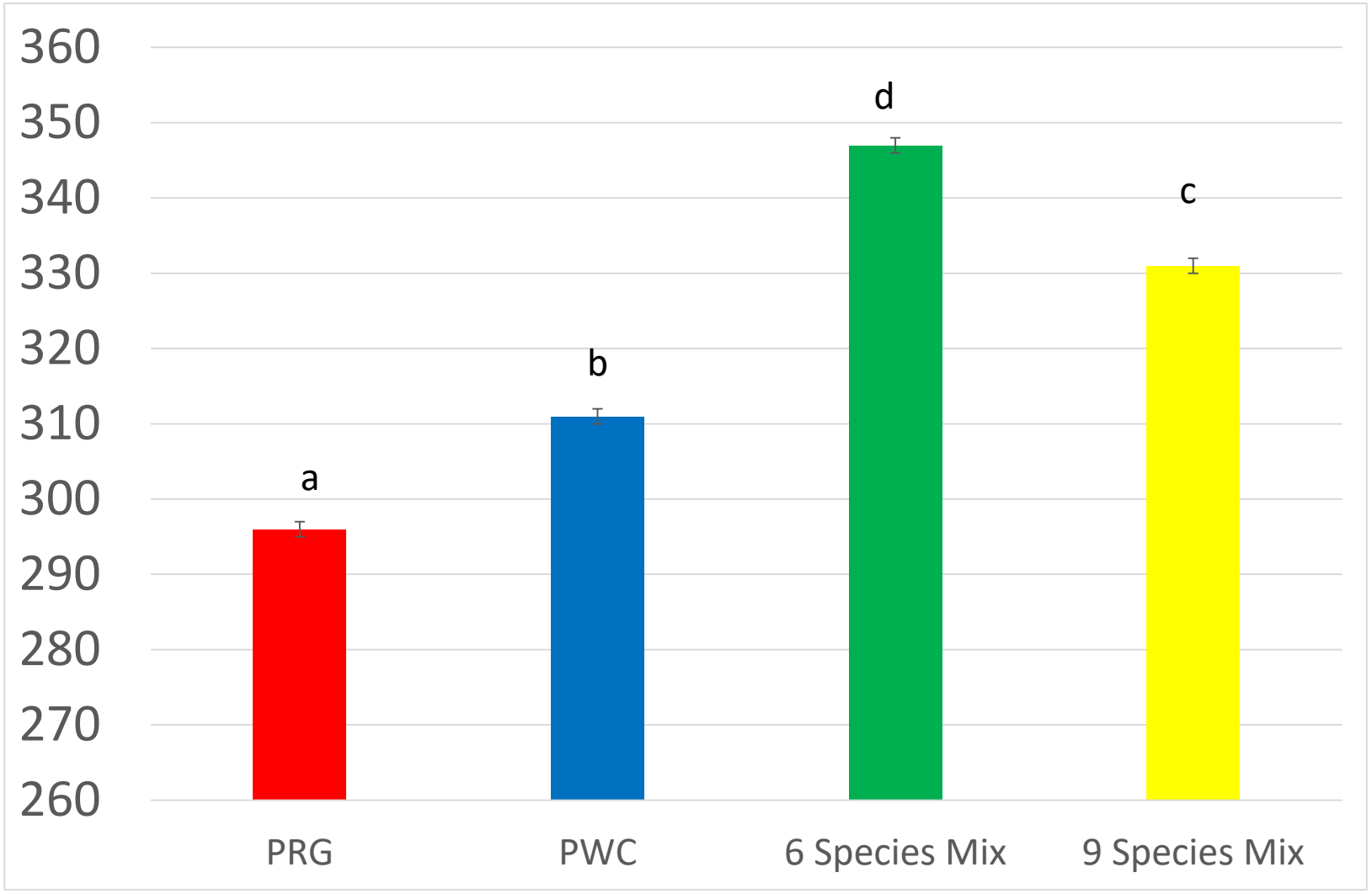
The effect of treatment on lamb live weight from birth to weaning



The effect of sward type on lamb weight at 6 weeks



The effect of sward type on average daily gain (ADG) from birth to 6 weeks(g/day) P<0.05



Late Lactation

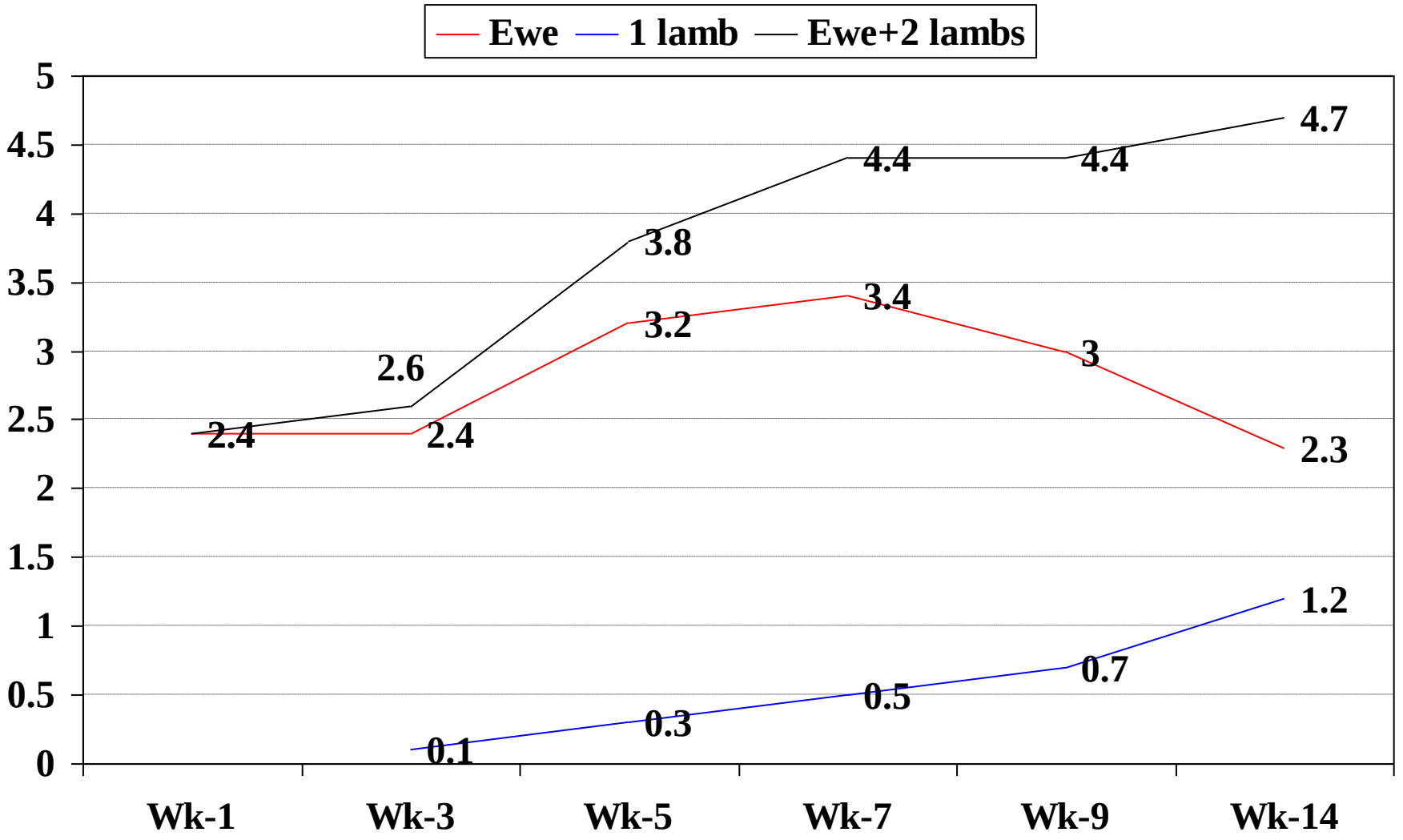
DM intake requirements of ewes during mid lactation

	Single suckling		Twin suckling	
	Kg DM per ewe per day*			
	Week 6	Week 9	Week 6	Week 9
70 kg ewe	2.88	2.70	4.38	4.06
Lamb	0.5	0.8	0.4	0.7

*assuming a minimum ME content of 10.8 MJ ME per kg DM

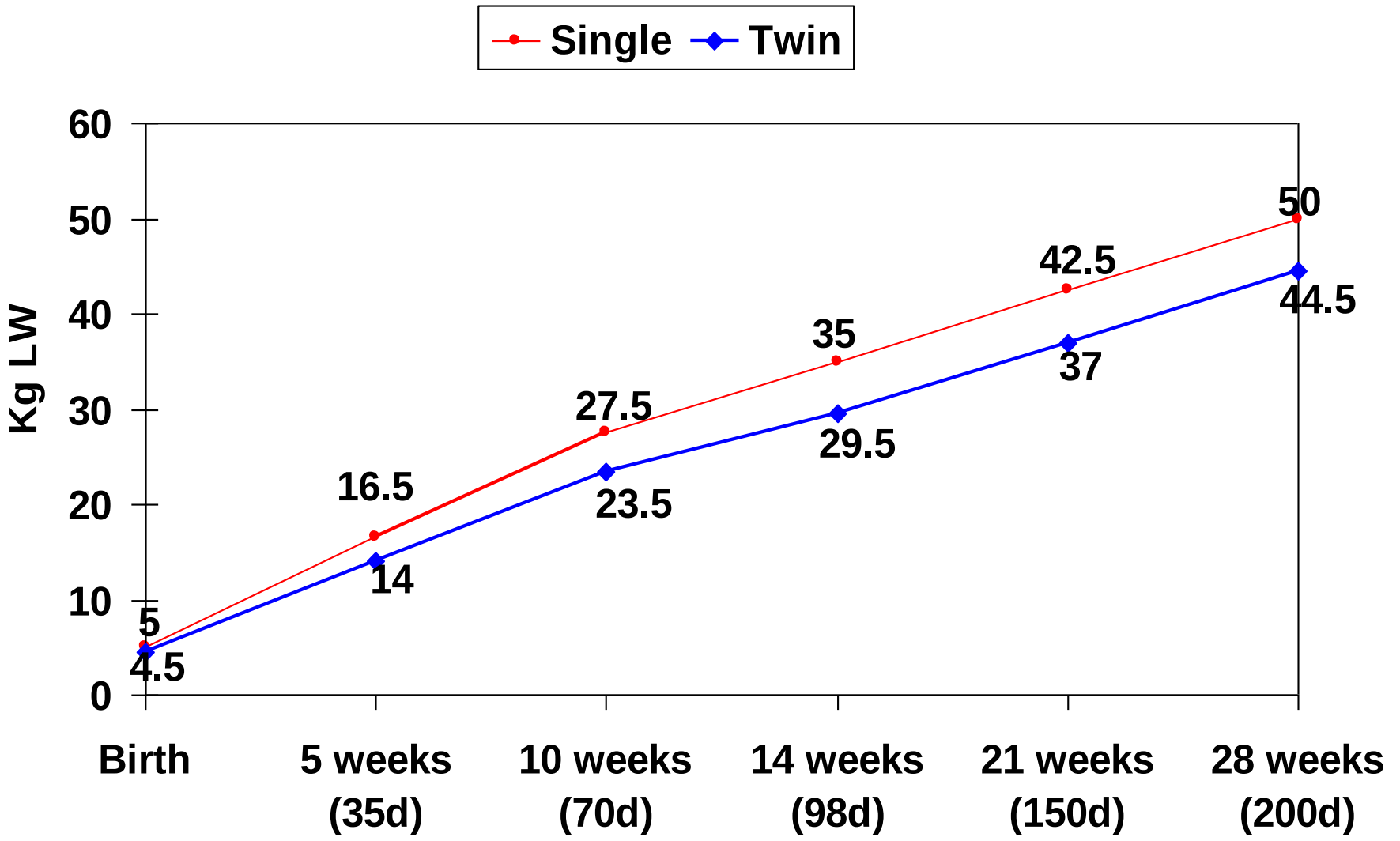
Source: Beef and Lamb New Zealand, Knowledge Hub

Grass Intake by Twin-suckling Ewes (kg DM/d)



Source: Teagasc

Lamb Growth Rate and Weight



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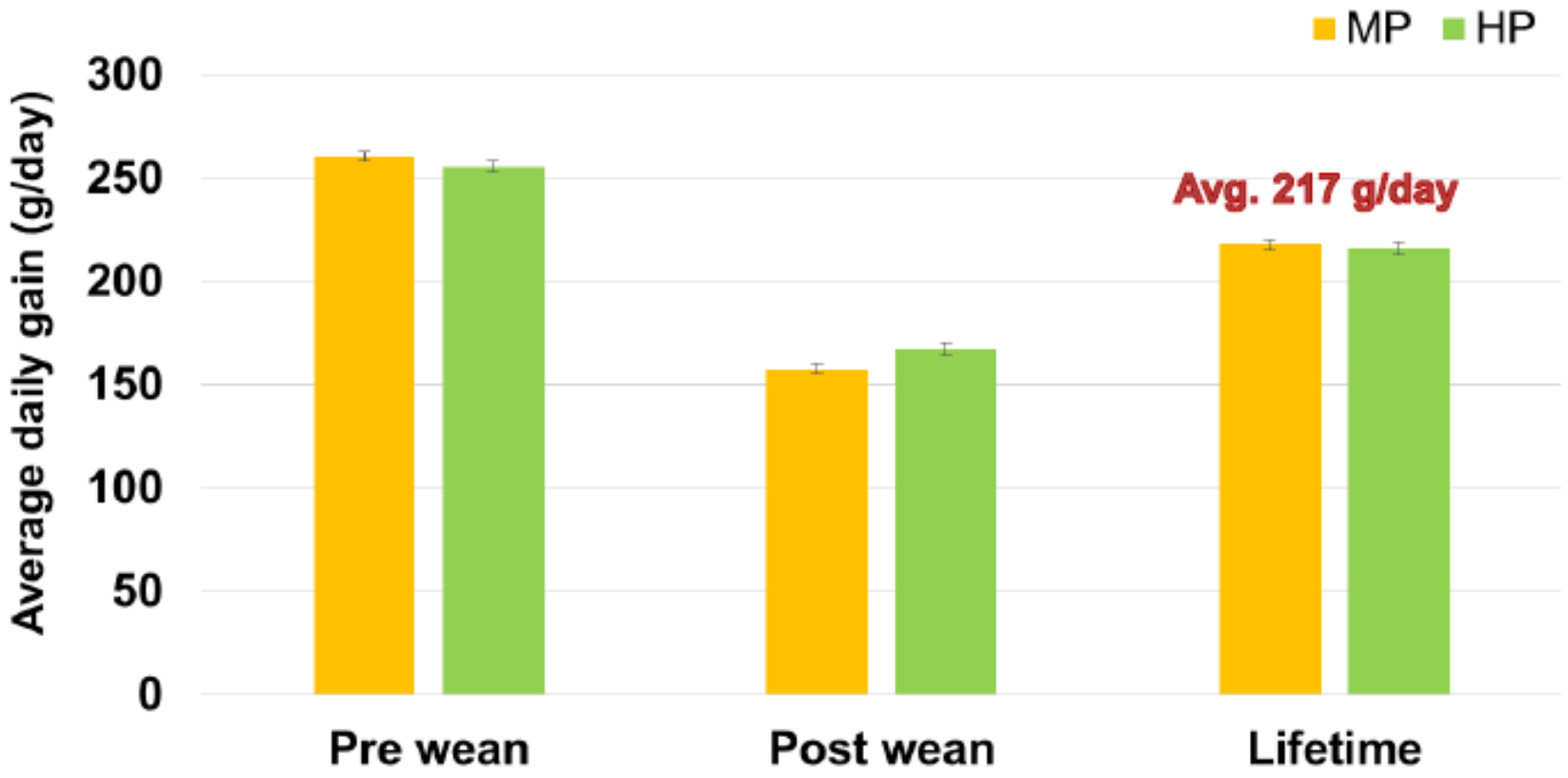
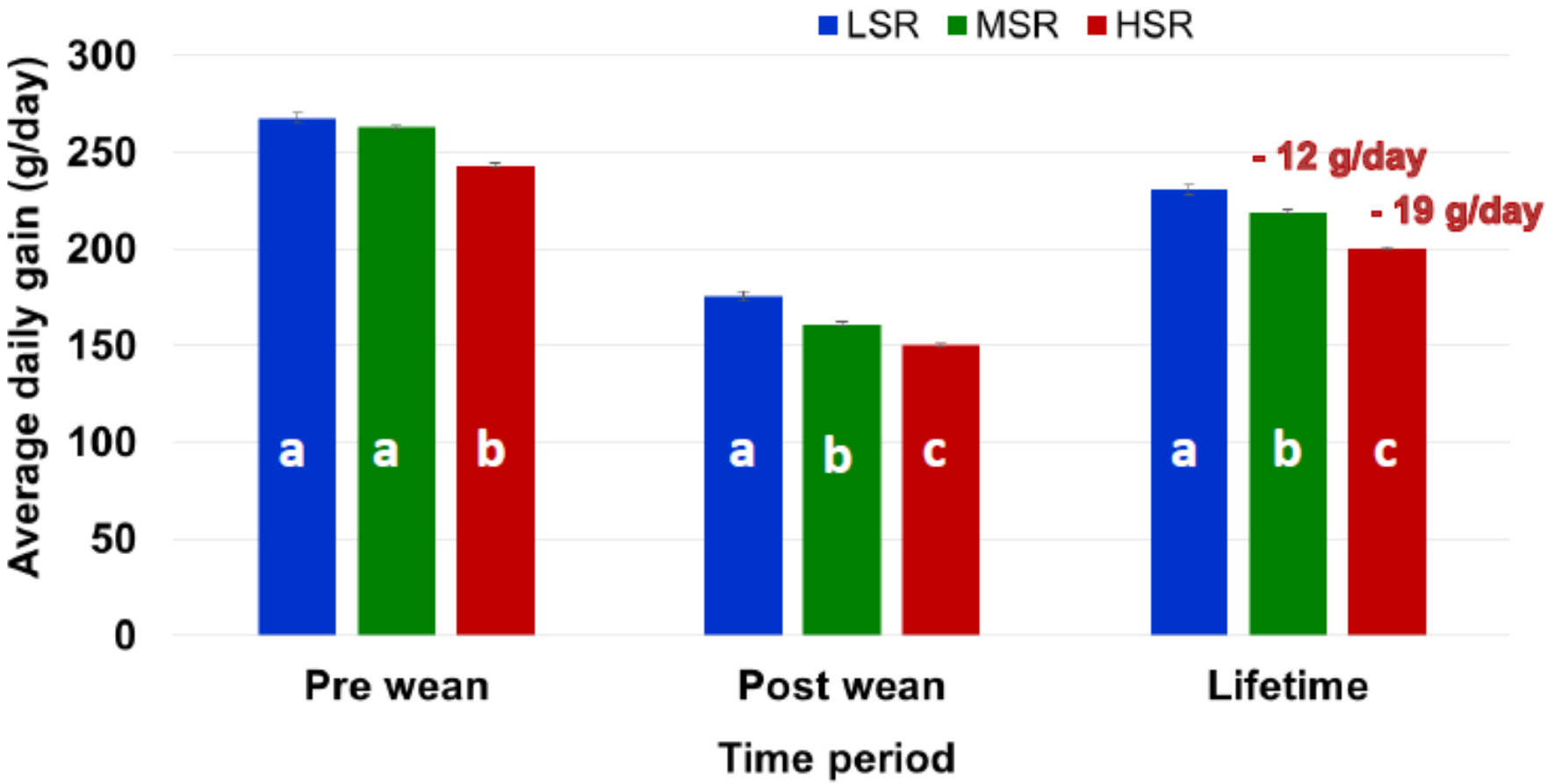
The effect of ewe PP on lamb growth



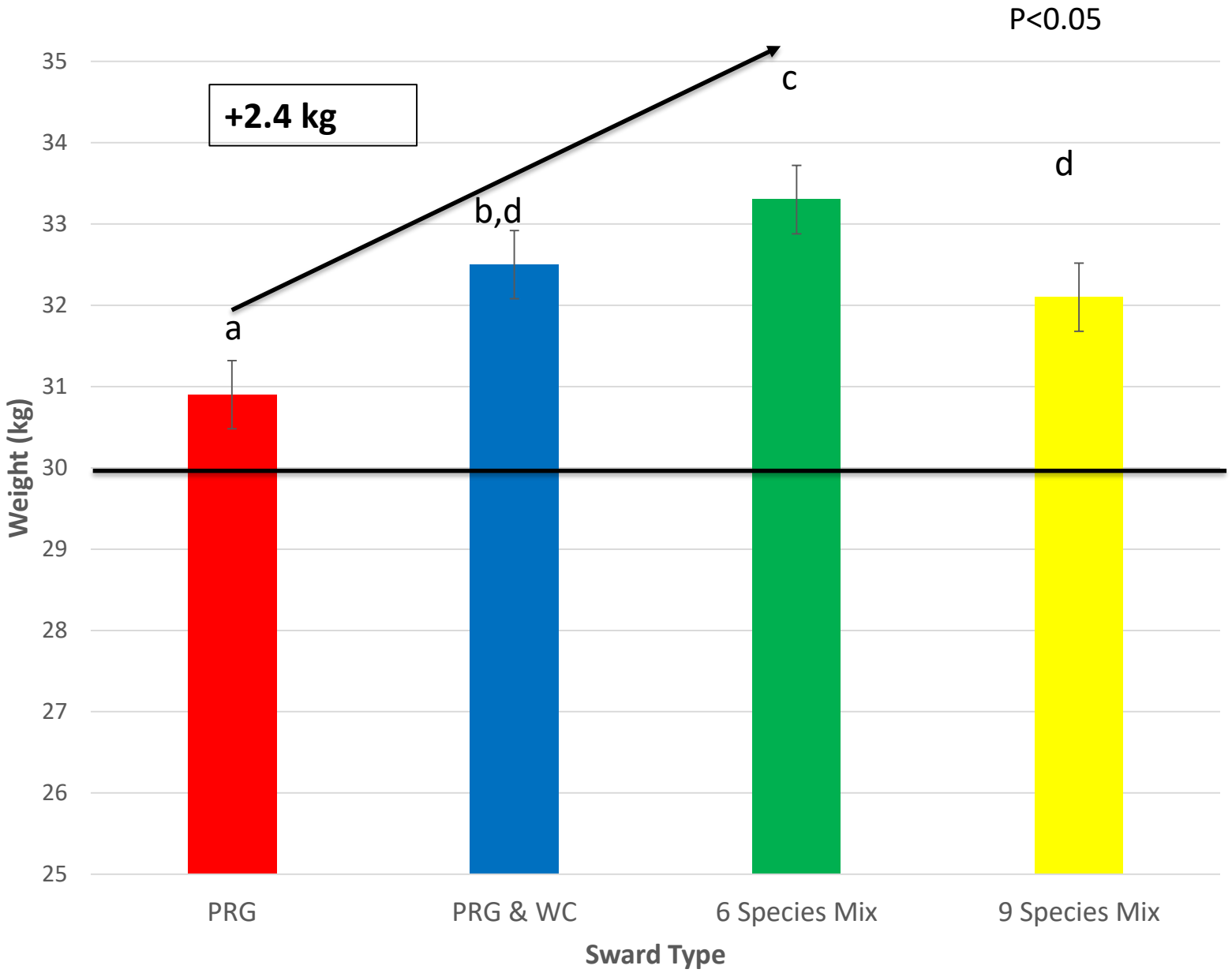
Pre-wean: P<0.05
Post-wean: P<0.01
Lifetime: NS

The effect of SR on lamb growth

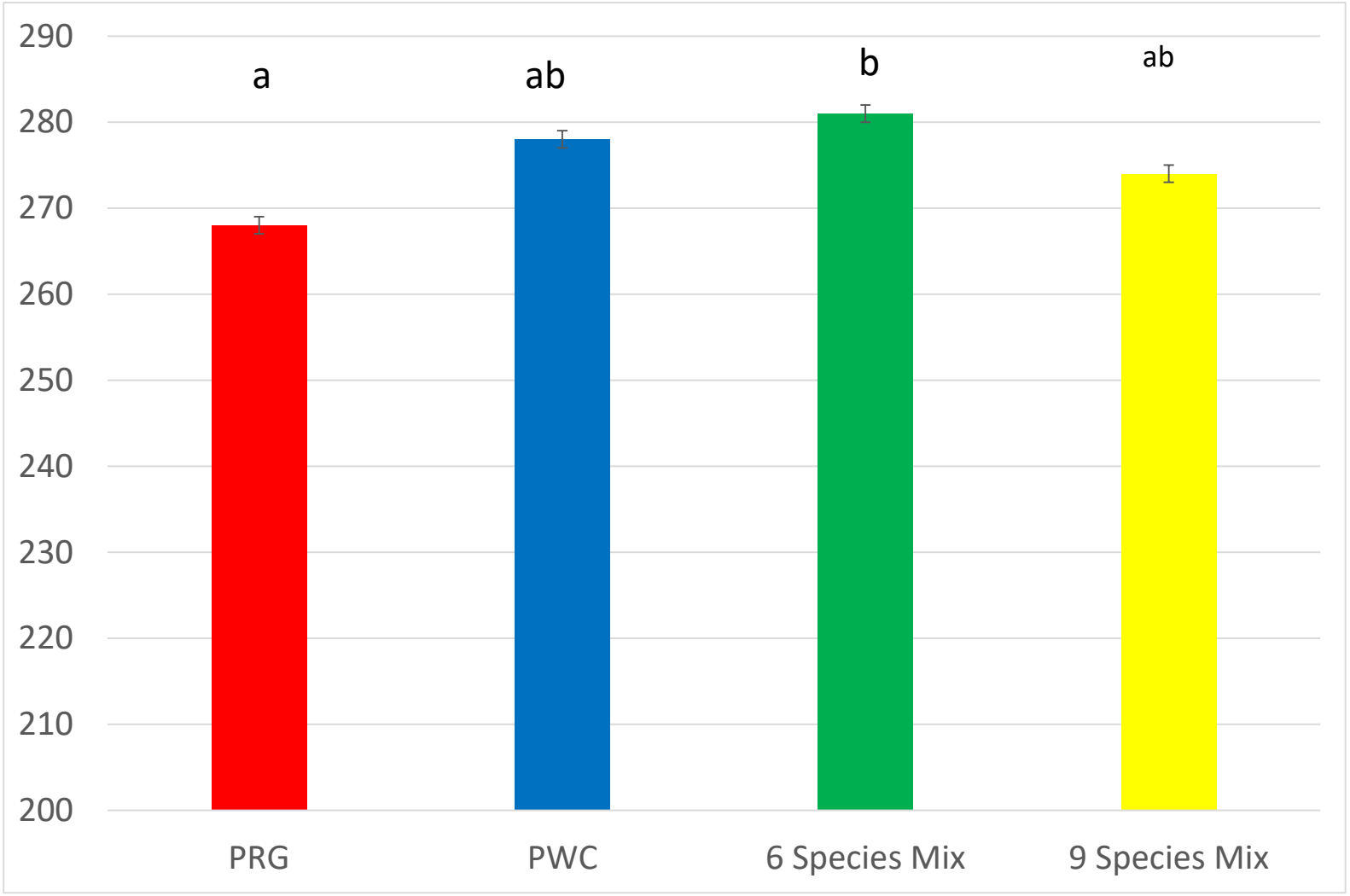


Pre-wean: P<0.001
Post-wean: P<0.001
Lifetime: P<0.001

The effect of sward type on lamb weaning weights

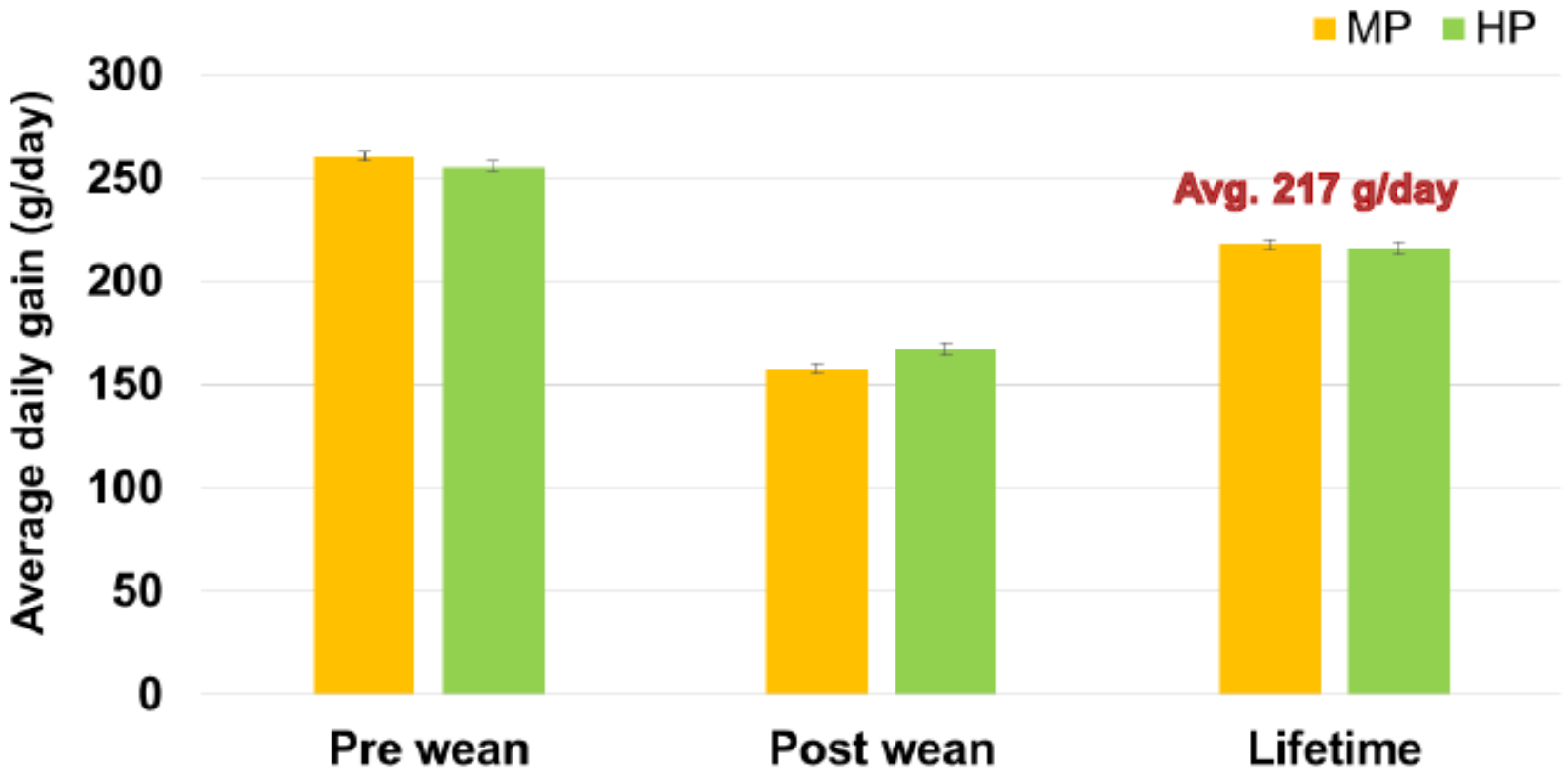


The effect of sward type on average daily gain (ADG) from birth to weaning (g/day) P<0.01



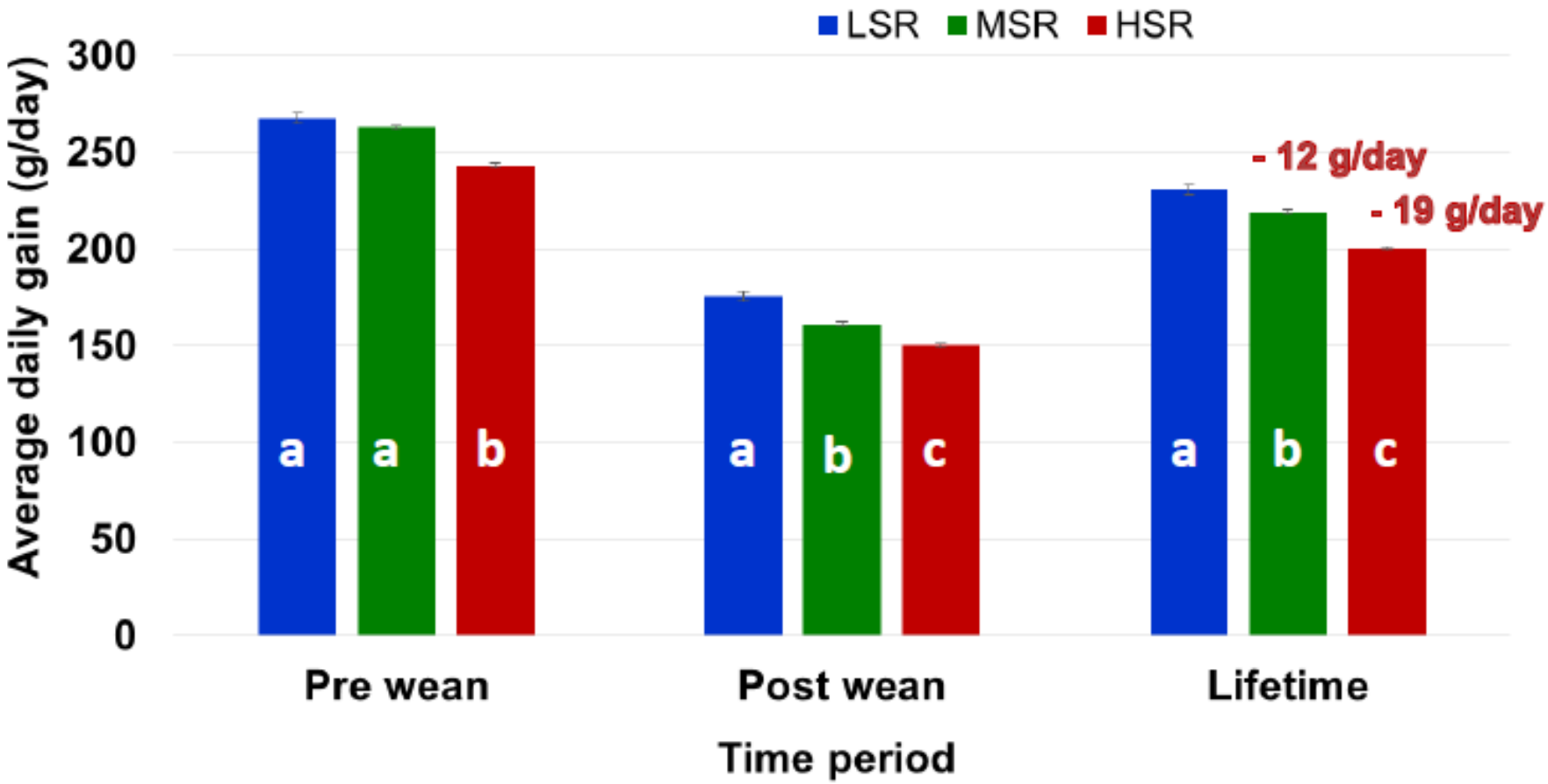
Post Weaning

The effect of ewe PP on lamb growth



Pre-wean: P<0.05
Post-wean: P<0.01
Lifetime: NS

The effect of SR on lamb growth



Pre-wean: P<0.001
Post-wean: P<0.001
Lifetime: P<0.001

Weaned lamb

- A 30kg lamb requires 18 MJ ME to grow at 250 grams per day

Relative lamb performance index for breeds when used as terminal sires

Sire Breed	Weaning weight	Sale date	Carcass weight	Conformation	KO%
Suffolk	100	100	100	100	100
Texel	96	104	102	100	102
Charollais	97	102	101	100	102
Beltex	96	106	98	106	102
Vendeen	94	106	100	98	101

(S. Hanrahan)

Effect of castration at birth on the growth rate of twin lambs

Growth Trait	Sex of lamb		Significance
	Entire	Castrate	
Growth rate (birth to 5 weeks, g/day)	288	281	P<0.1
5 weeks to weaning (g/day)	282	256	P<0.001
Weaning weight (kg)	31.7	29.9	P<0.001
Sale date	8 Aug	24 Aug	P<0.001
Liveweight at slaughter (kg)	41.9	41.3	P<0.05
Carcass weight (kg)	18.1	18.2	n.s.
Kill-out (%)	43.0	44.0	P<0.001
Fat Score	2.9	3.1	P<0.001
Conformation score	3.2	3.3	P<0.05

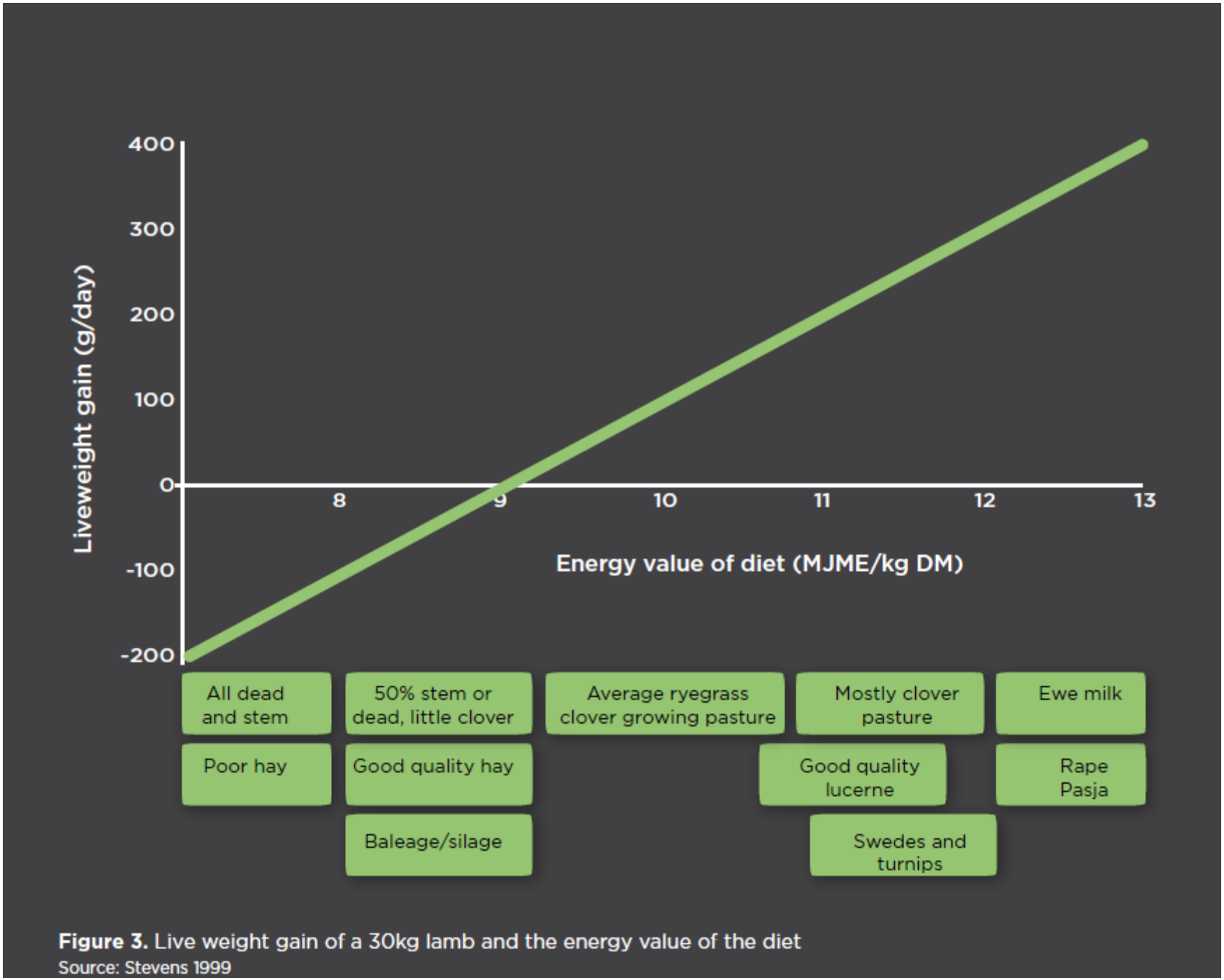
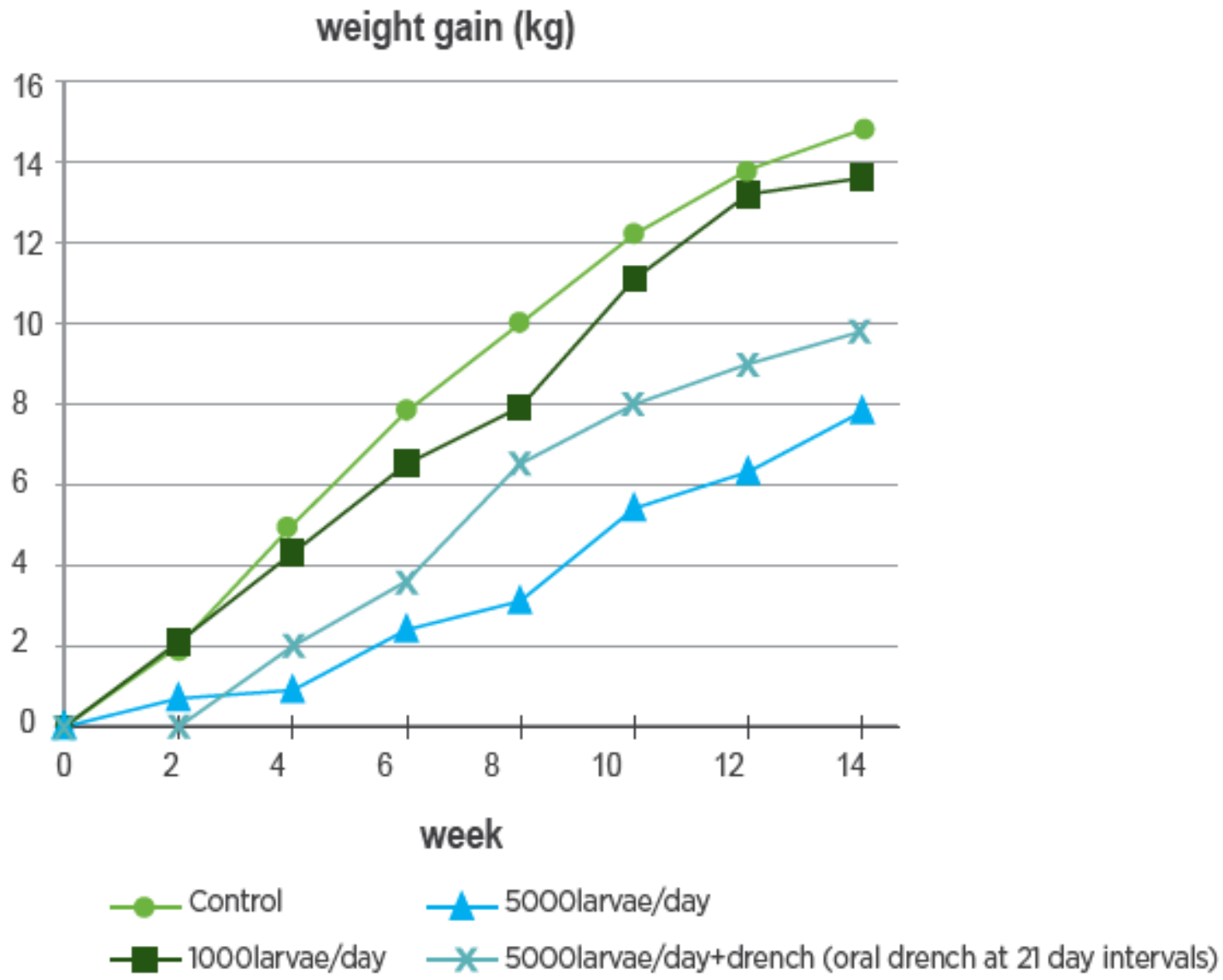


Figure 3. Live weight gain of a 30kg lamb and the energy value of the diet
Source: Stevens 1999

This diagram illustrates that long before clinical (visible) signs of worm infection occurs, there can be significant production loss.

Effect of daily intake of *Ostertagia* larvae and anthelmintic on growth of young lambs (adapted from Coop et al 1982)



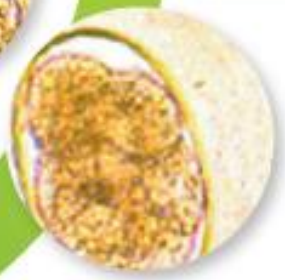
Once in the gut L3 larvae moult to L4 (immature worms) which finally mature into adult worms

Female worms are sexually mature and start laying eggs around 21 days after being eaten

wormwise

national worm management stra

The eggs pass out into the dung

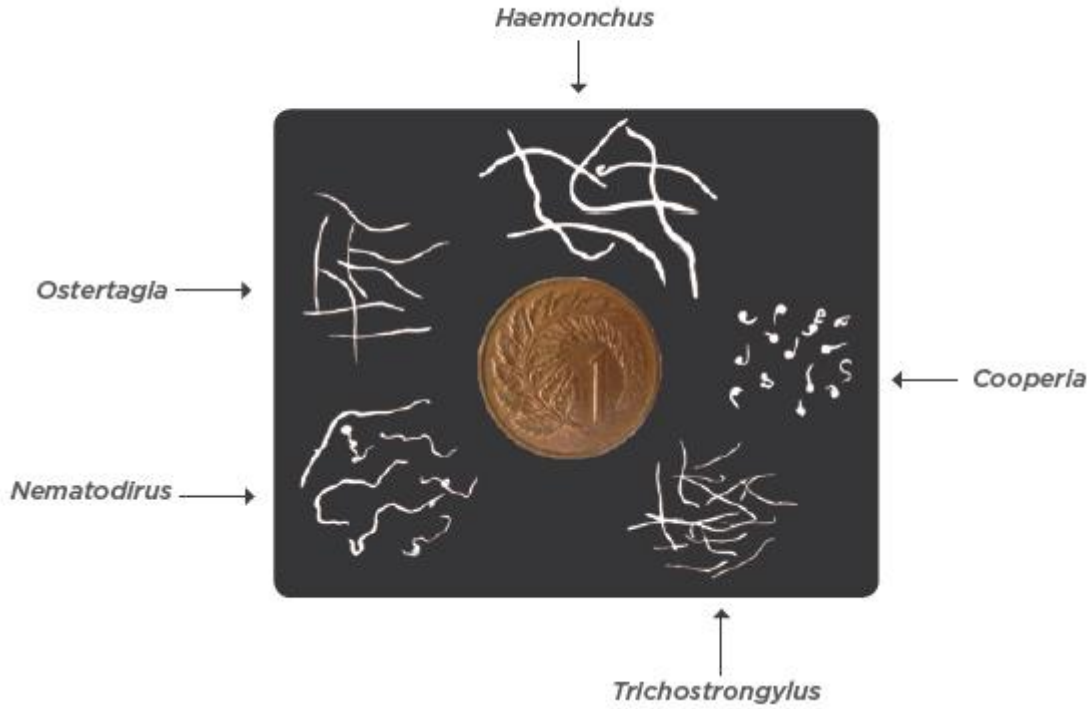


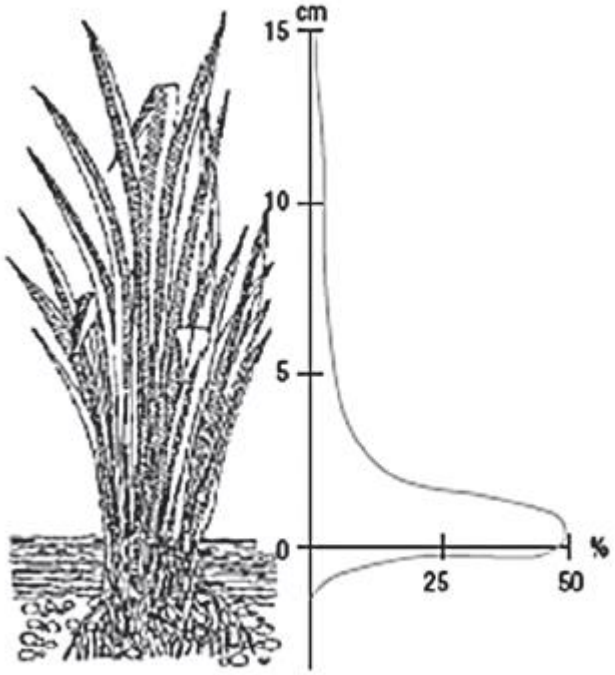
The infective larvae migrate into soil and onto the herbage to be eaten by grazing animals

L3 larvae may survive for long periods; even beyond a year

In the dung pat, larvae hatch from the egg and go through 2 moults to become infective L3 larvae

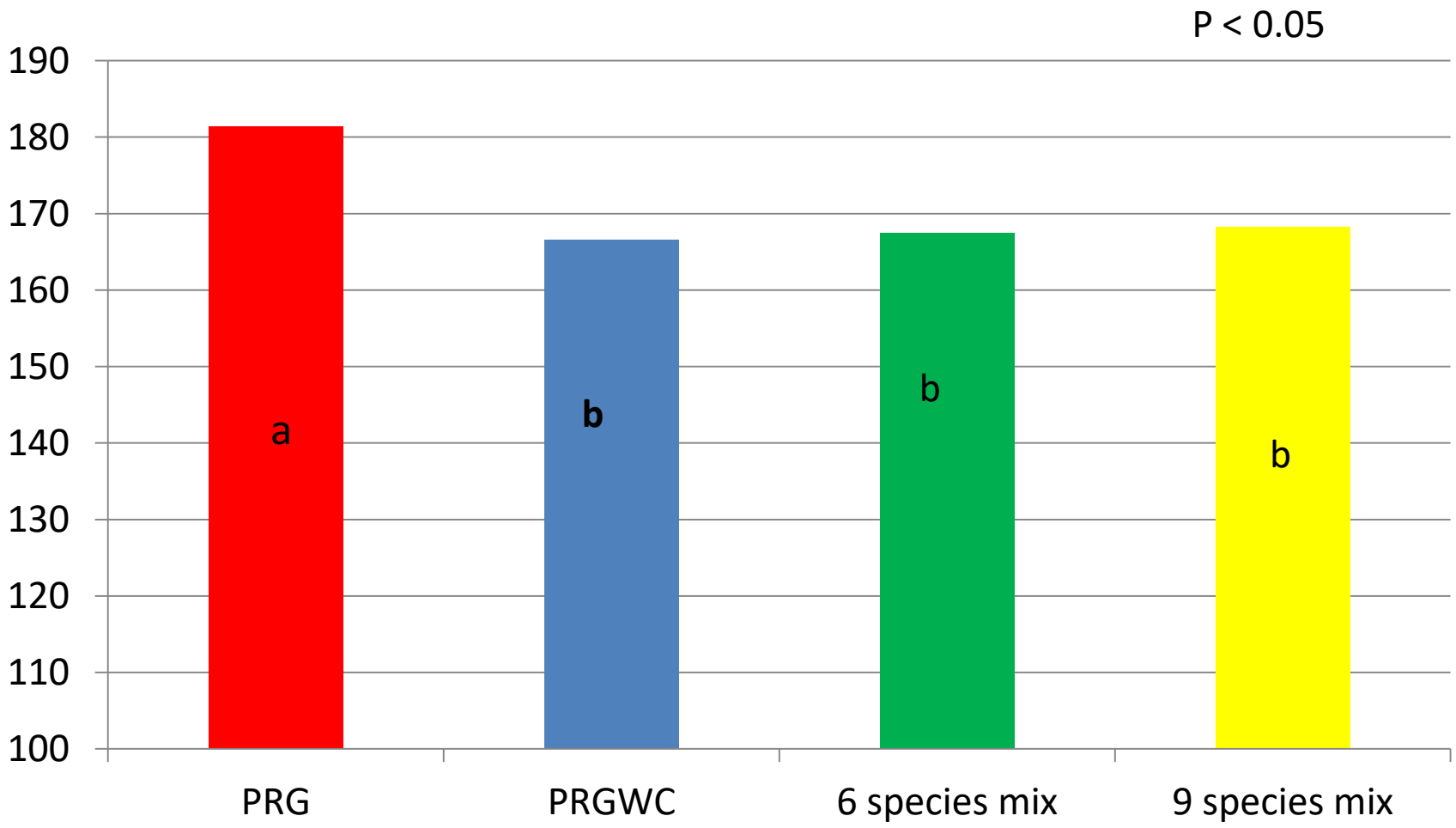
[egg➡L1➡L2 ➡L3 = 1–10+ weeks depending on environmental conditions]



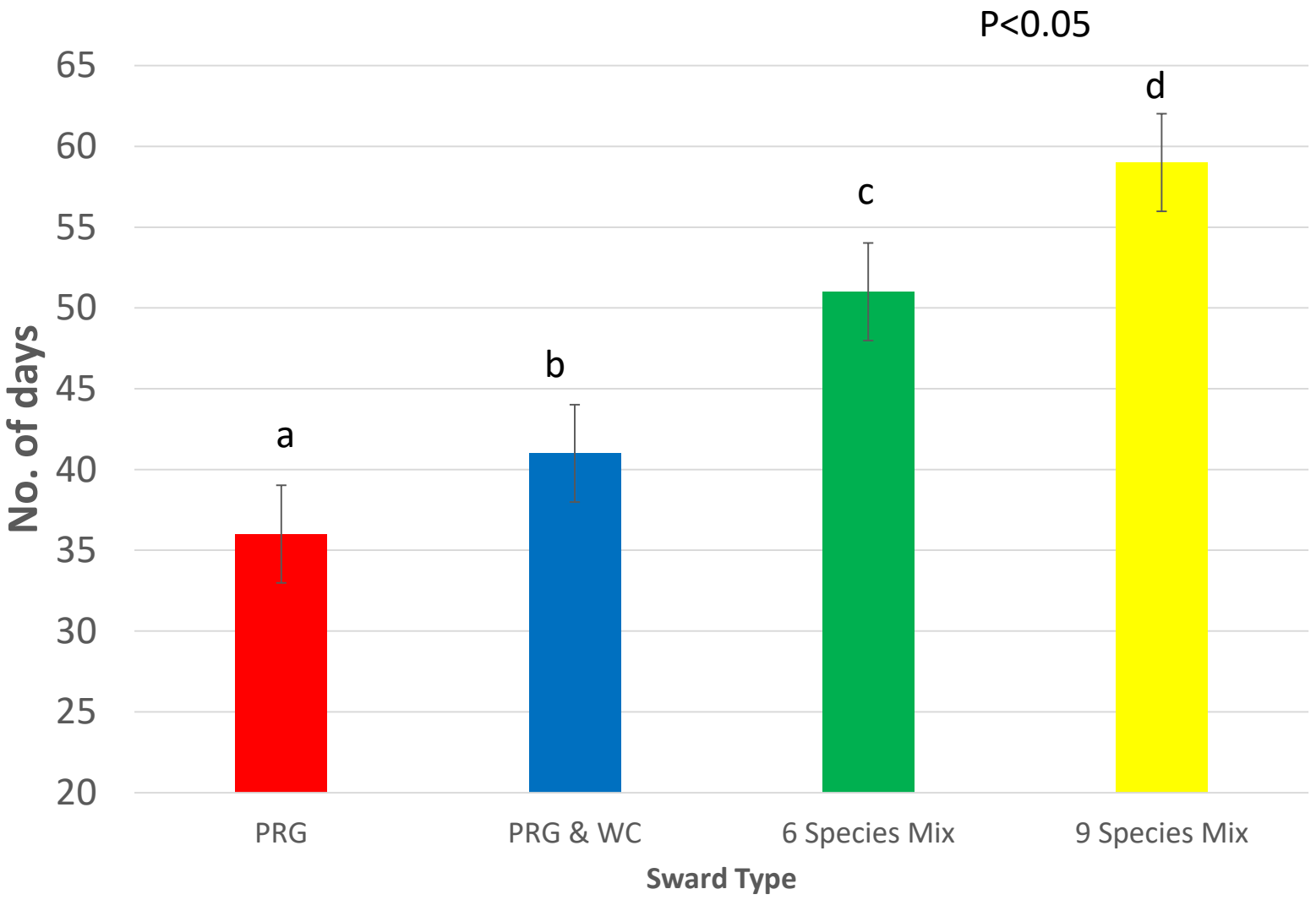


The vertical distribution of infective larvae on grass.

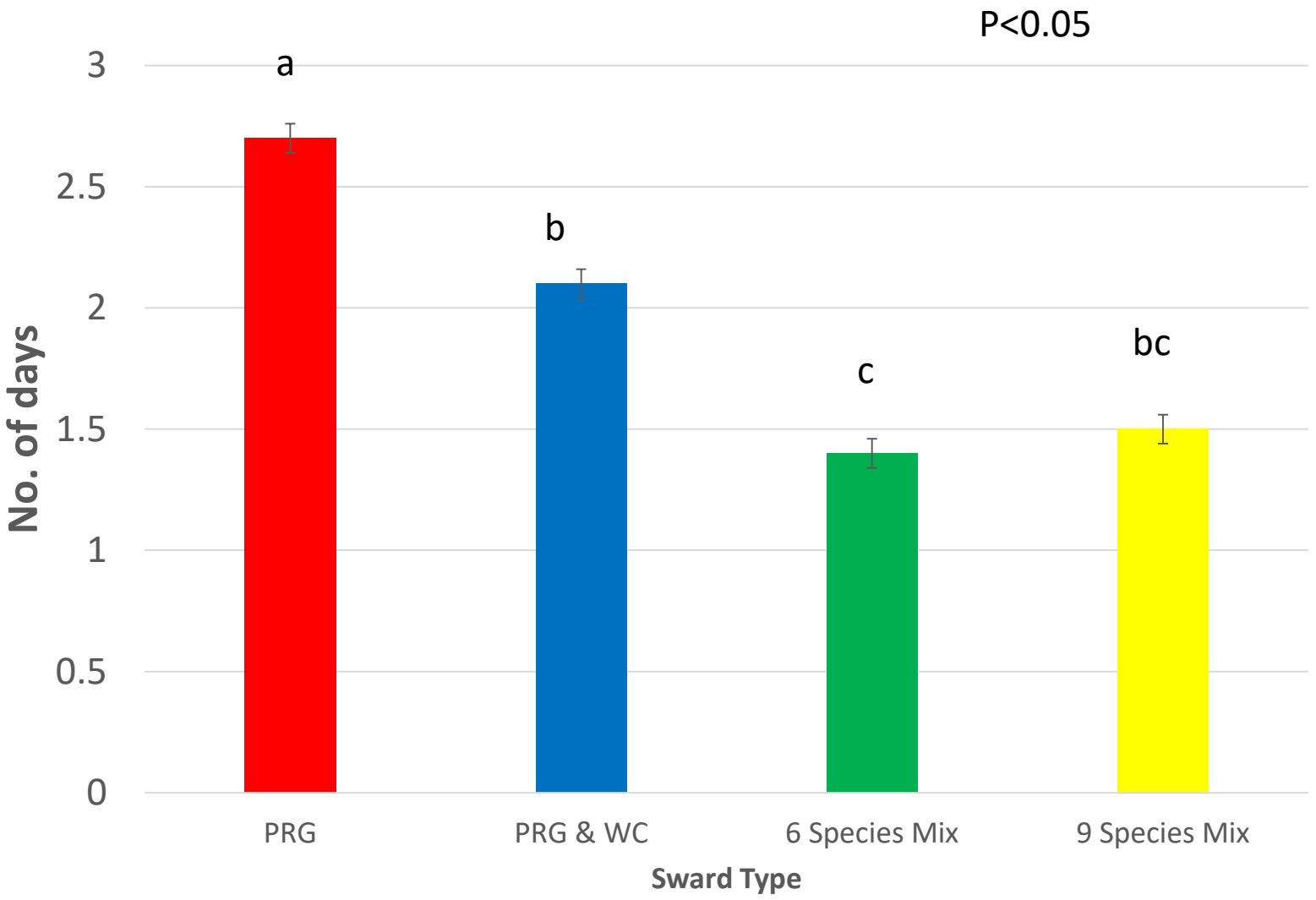
The effect of sward type on number of days required to reach target slaughter weight



The effect of swards type on the time between first and second anthelmintic treatment



The effect of swards type on mean number of anthelmintic treatments required



Summary

- Large vigorous lambs at birth
- Lots of colsotrum
- Ewes must have BCS to mobilise
- Maximise milk intake in early lactation
- Have lots of good quality feed in late lactation for lambs
- Feed quality, parasite control and trace elements are critical after weaning

Questions ?