



Sheep Milk Conference 20 March 2019

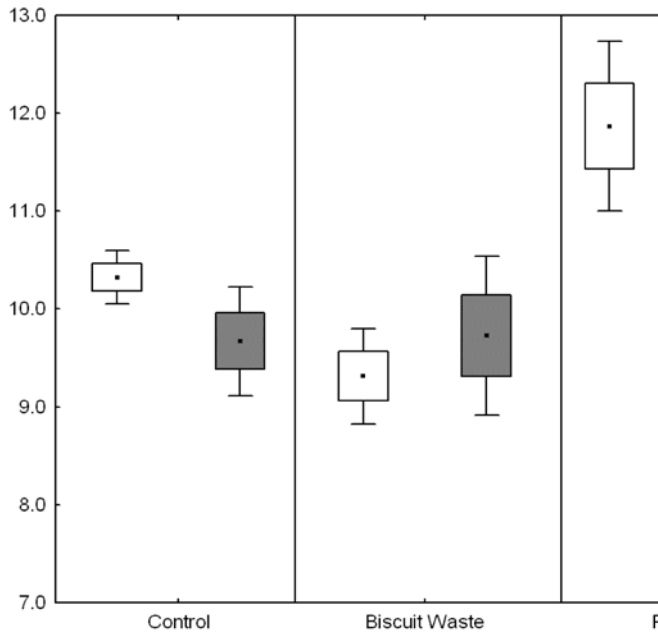
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UTRITECH
LEADERS IN ANIMAL NUTRITION



Introduction



A Ruminant Nutritionist's View



Farmer Requirement

Ambitions, Staff,
Communication,
Technical requirements

Image credit: Maui Milk



Animal requirement

Liveweight, genetics, activity,
lactation, growth, wool, climate,
'ewe signals'

Image credit: Maui Milk



Feed Supply & Infrastructure

Pasture growth curve,
quality, crops available,
silages, concentrates, feeding
infrastructure, environmental
requirements



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Nutrient Balance

Energy

Protein

Fibre

Vitamins and
Minerals



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Diversity of feeds

What does it mean?

Each feed supplies a different nutrition profile

Ca: Maize (0.03%) Wheat (0.07) DDGs(0.32%) Soy bean (0.40%) Soy Hull (0.53%) Pasture (0.6-0.8%)

P: Fodder Beet, Soy hull (0.18) Maize, Wheat (0.3%) Pasture (0.3-0.45%) Soy bean (0.71%)



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New Zealand Veterinary Journal



ISSN: 0048-0169 (Print) 1176-0710 (Online) Journal homepage: <http://www.tandfonline.com/loi/tnzv20>

Skeletal deformities associated with nutritional congenital rickets in newborn lambs

KE Dittmer, RE Morley & RL Smith



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Figure 1. Photographs of Coopdale sheep from a farm in the Southland region of New Zealand showing (a) a 1-day-old lamb with rickets with shortened limbs and palmar grade stance, (b) a 2-month-old lamb with rickets with a palmar grade stance and cranial bowing at the level of the carpus, and (c) a 2-year-old ewe with a central twisted incisor, brown pitting discoloration of the central incisors and worn deciduous incisors.



Late gestation ewe requirements

	Maintenance	Growth	Last trimester	Lactation	Wool growth	Total Requirement	2.5kg bulb, 0.5kg leaf	Balance
Ca (g)	6.021	5.774	3.948			15.7	59	43.2
P (g)	5.468	2.670	1.380			9.5	5	-4.5
Mg (g)	1.412	0.121	0.459			2.0	8	6.0
Na (g)	0.949	0.060	0.086			1.1	19.6	18.5
Se (mg)	0.065	0.081	0.048		0.03	0.23	0.1	-0.13
Co (mg)						0.70	0.8	0.1
Cu (mg)	0.6886					0.69	22	21.3
Iodine (mg)						2.8	0.1	-2.7
Zinc (mg)	40.53	0.01	15.000		10.50	66	111	45
Vit D	448		213			661	620	-41
Vit E						134	27	-107



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Ewe Nutrition requirements

Key messages:

1. High performance dairy sheep need attention to detail – the little things might be big things
2. 'Stockmanship' and 'ewe signals' are critical
3. Feed testing, diet analyses, bloods can help build the picture
4. Nutritionists, veterinarians etc can help with the detail

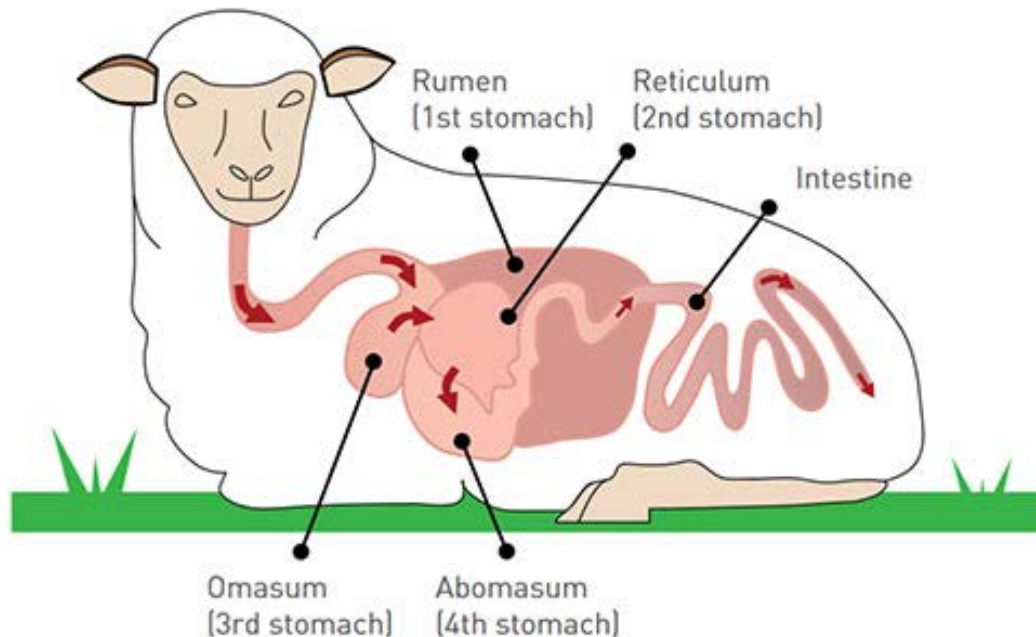


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Even when we get everything right 'on paper'



Some things still don't add up?



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1. Forage quality (NDF)

- **NDF affects intake**

- 1.25% liveweight as NDF 'rule of thumb'
- = 2.6kgDMI (75kg ewe, 35% NDF pasture or silage)
- = 2.1kg DMI (75kg ewe, 45% NDF pasture or silage)

**Message: Feed quality = dry matter intake
: Feed testing recommended
(especially of silages)**



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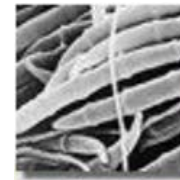


2. Forage quality (mycotoxins)

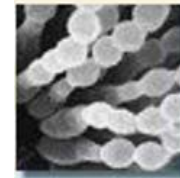
Mycotoxins = toxins produced by fungi

Are present all the time, but increase when:

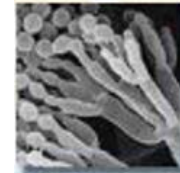
- Pasture goes to seed (endophyte)
- Base of sward becomes fibrous
- Warm, humid weather



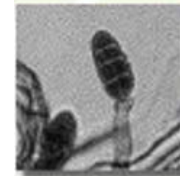
Fusarium sp.



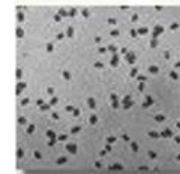
Aspergillus sp.



Penicillium sp.



Alternaria sp.



Claviceps sp.
etc.





2. Forage quality (mycotoxins)

**Are present all the time,
but increase when:**

- **Silages are fed**
 - Slow feed out rate of stack
 - Feeding out in advance
 - Spoiled silage is a definite risk
 - Fermentation quality has big influence
 - Residual feed in feed alley



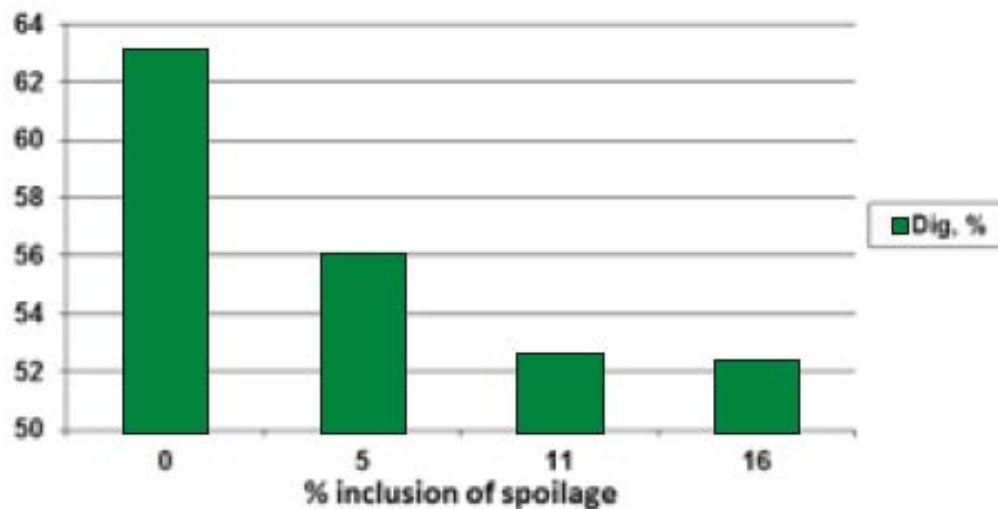
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2. Forage quality (mycotoxins)

Effect of spoilage on NDF digestibility



Whitlock et al 2002

Effect on the rumen?

Whole diet digestibility decreases.



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3. Forage quality (clostridia, listeria)

‘Moon gazing’ or Circling disease

Effect: Animal health (abortions in late pregnancy, circling disease), production and product quality (especially cheese)

Source: Often comes from forages (fresh, but most commonly ensiled).

Ewes with weakened immune system at highest risk



Image credit: National Animal Disease Information Service



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3. Forage quality (clostridia, listeria)

Conditions that increase the risk?

- Soil contamination of pasture or silages (rain splash, mower height, transfer from tractor tyres)
- Low dry matter silage
- Low sugar content silage
- Oxygen penetration of silage
- Ensiled legumes (lucerne, RC/WC)
– calcium & protein





3. Forage quality

Silage is often overlooked when assessing ewe performance
We can do better!





4. Rumen health

Sub-acute rumen acidosis

- **What do you see?**
 - Restless, abdominal pain
 - Go off feed
 - Loose manure
 - Low cud chewing activity
 - Reduced milk fat %
 - Excessive water intake
 - Chewing fence posts, licking clay
 - Stagger, bloated, cast
 - Laminitis

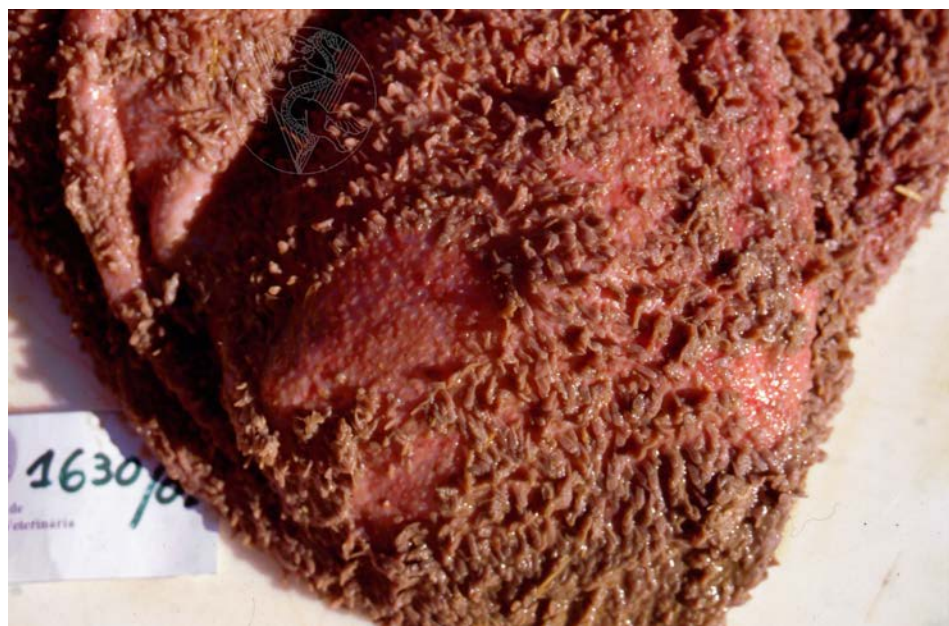


Image credit: FMV, University of Libosa



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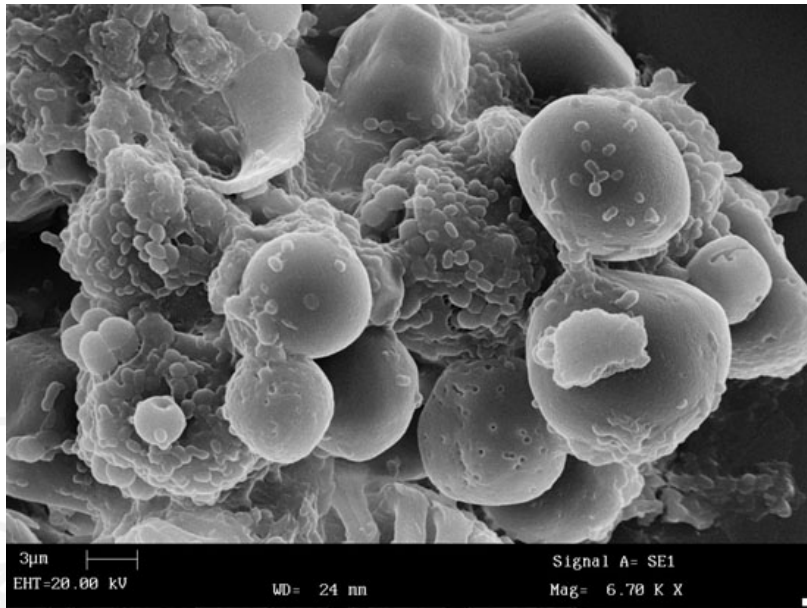
4. Rumen health - acidosis prevention

- Gradual adaptation of rapidly fermented carbohydrates (concentrates)
- Inclusion of a fibre source (especially with lush pastures)
- Inclusion of buffers (e.g. bicarbonate)
- Inclusion of live yeasts (preventative)





4. Rumen health – role of live yeasts



Journal of Polish Agricultural Universities.
Yeast cell, fodder molecules and multiplying
bacterial colonies

- Globally one of the fastest growing additives
- Antibiotic / Ionophore free trends
- Improving rumen microbial environment

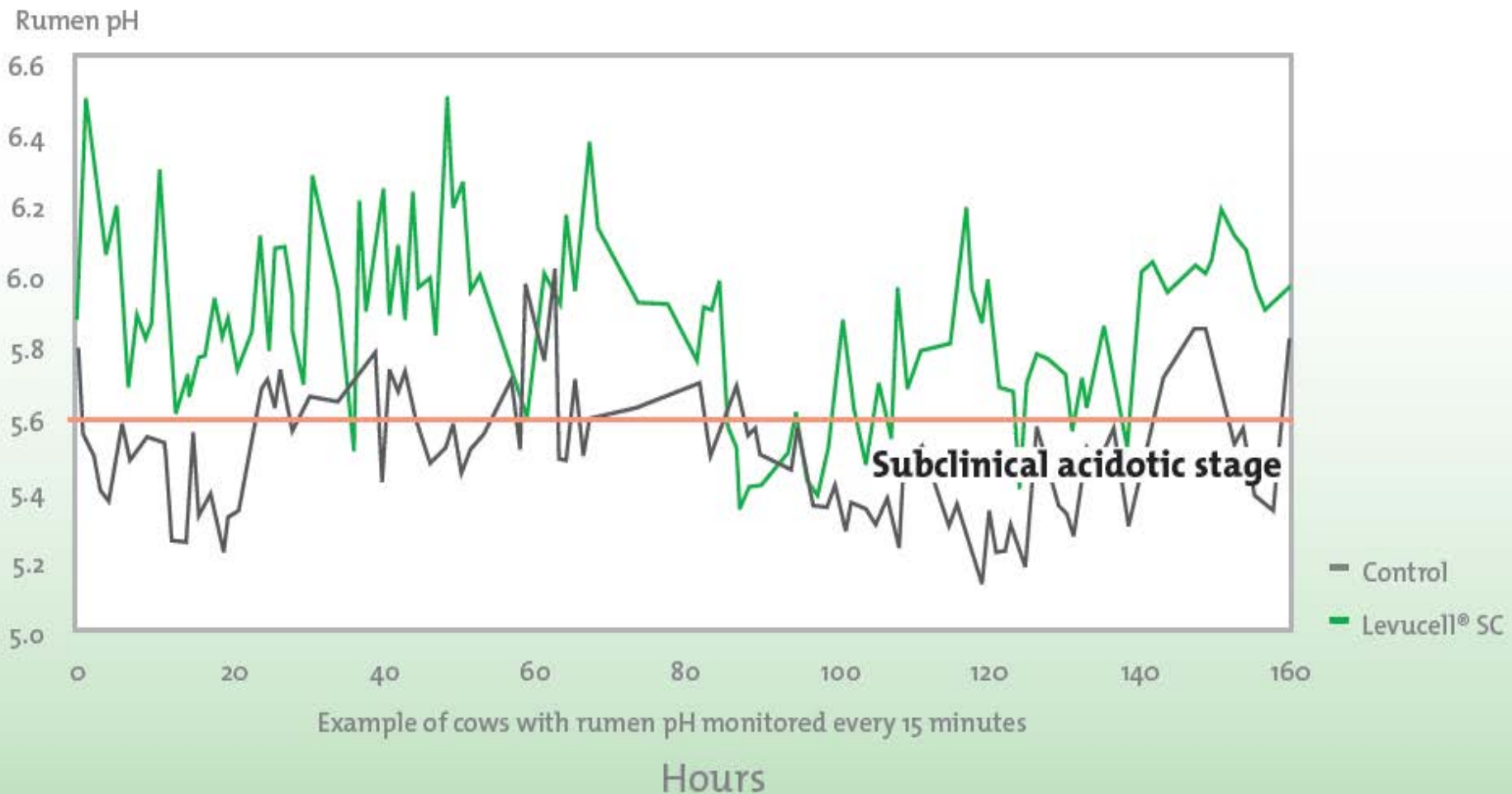


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4. Rumen health – role of live yeasts





4. Rumen Health (Levucell®SC live yeast)

Trial location and year	Animals	Duration	Milk Yield	Additional information
Agricultural school of St Afrique, France, 1998	54 Lacaune	3 months	+200g +11.3%	
University of Messina, Italy, 2006	82 Valle del Belice	5 months	+83.5g +8%	Improved curdling properties
NAGREF, Greece, 2006	62 Sfakia	6 months	+70g +9%	Reduction of SCC in milk
Crespin rearing, France, 2006	210 Lacaune	3,5 months	+7%	-58% of cells in milk

Table 2. A summary of the main Levucell® SC independent trials in dairy ewes.



4. Rumen Health (Levucell®SC live yeast)

	Control	Levucell® SC	Difference
Milk yield (g/d)	760	830	+9.2% +70g*
Fat (%)	6.45	6.45	(NS)
Fat yield (g/day)	48.47	53.34	+4.87*
Protein (%)	5.43	5.44	+0.01 (NS)
Protein yield (g/day)	40.84	45.49	+4.65*
Lactose yield (g/day)	36.58	41.30	+4.72*
Non fat solids (g/day)	82.69	92.47	+9.78*
SCC, log10	4.97	4.82	-0.15*

*p<0.05

Table 3. Example of ewe milk production and composition (Italy, 2006).



4. Rumen Health

Key messages:

- Do everything you can to look after rumen health
- Preventing rumen health issues is better than trying to treat it



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5. Other factors affecting FCE

- **Parasite challenge**

- Increases **protein** requirements (Dr Andrew Greer, Lincoln University)
- Increased liver turnover / tissue repair
- Development & maintenance of immunity

- **Heat stress**

- Increases maintenance requirements
- Decreases feed intake
- Increases risk of rumen acidosis

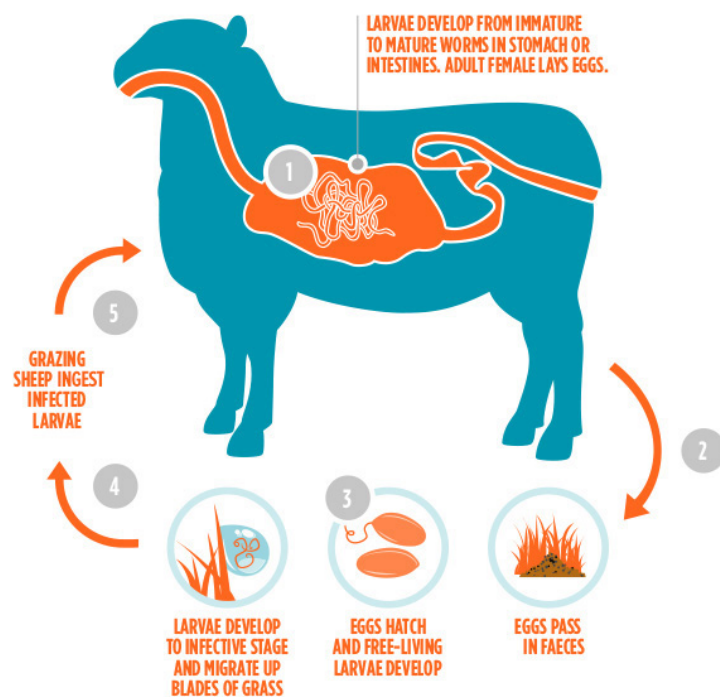


Image credit: Zoetis



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In Summary

- **Nutrition is important**
- **It can be complex, but focus on:**
 - Feed quality
 - 'Ewe signals'
 - People in the industry who can help (agronomists, vets, nutritionists, other farmers, University resources)
- **Silage quality is the area of greatest potential to improve ewe health and performance**
- **Rumen health is key to feed conversion efficiency**



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Thank you