



# MANAGING MILK FEVER

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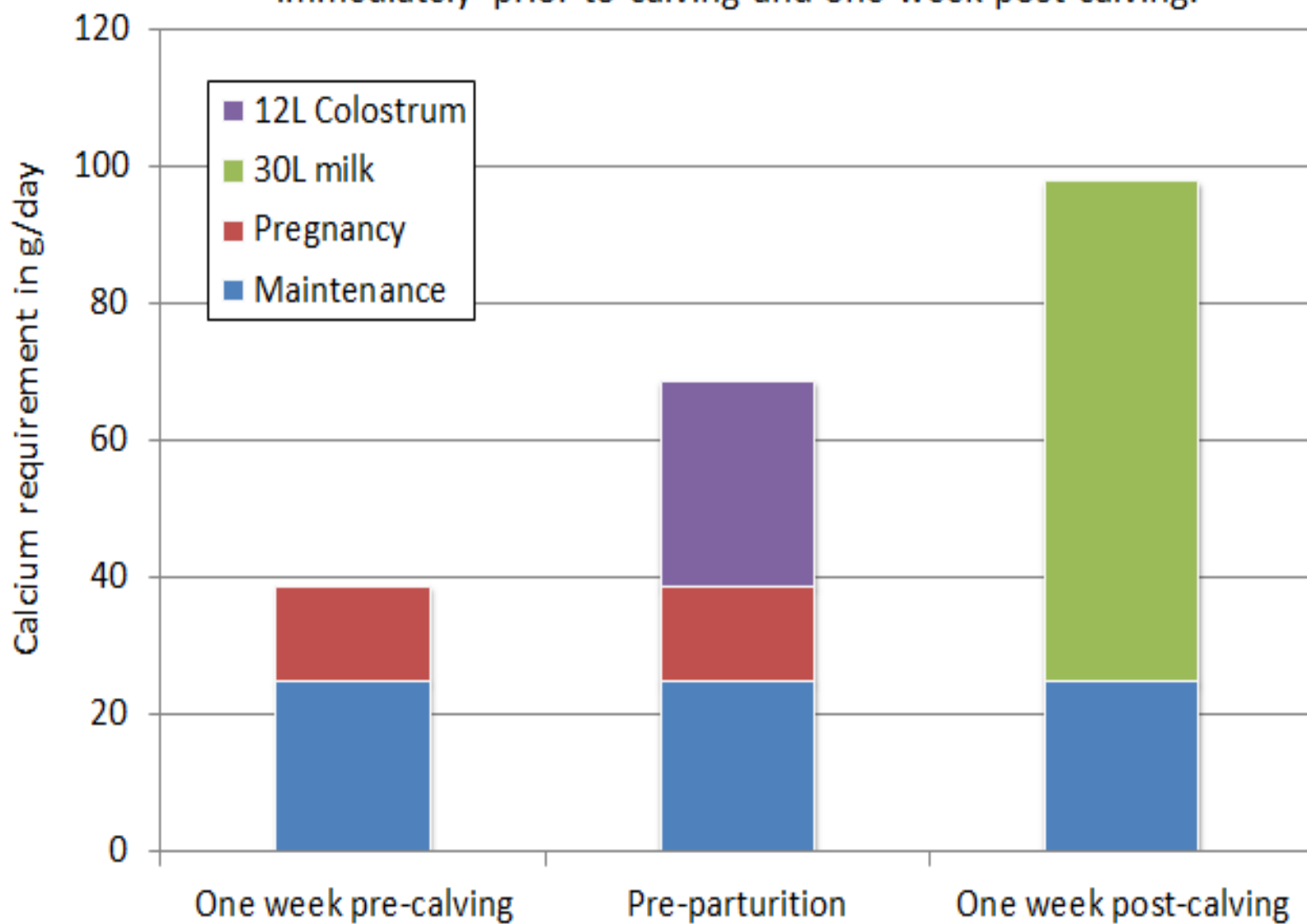
**Farm Health Planning - Coordinated by the Cattle Health and Welfare Group**

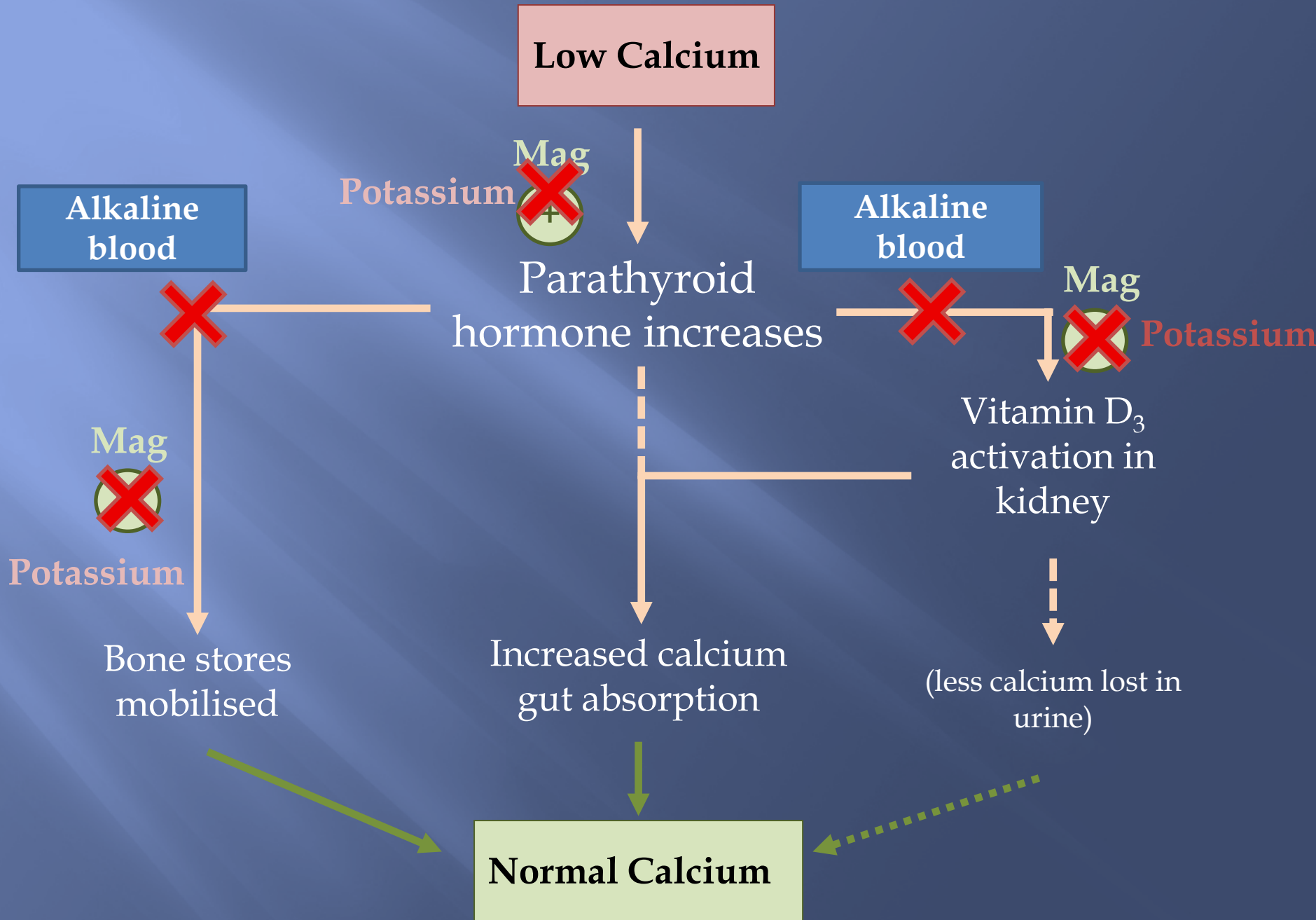
# Lower Buckholt Farm

- ▣ **Outgrew the family farm**
  - Rental of previously 'retired' greenfield site
  - Expansion of herd up to 260 milking stock
- ▣ **Autumn block calving**
  - Maximise yield over early winter housing period
  - Good use of grazing in Spring & Summer: control feedrate
- ▣ **Aim for >8000L production**
  - sustainable system
  - focusing on cow health and fertility



The Calcium Requirements of an adult holstein one week pre-calving, immediately prior to calving and one week post-calving.

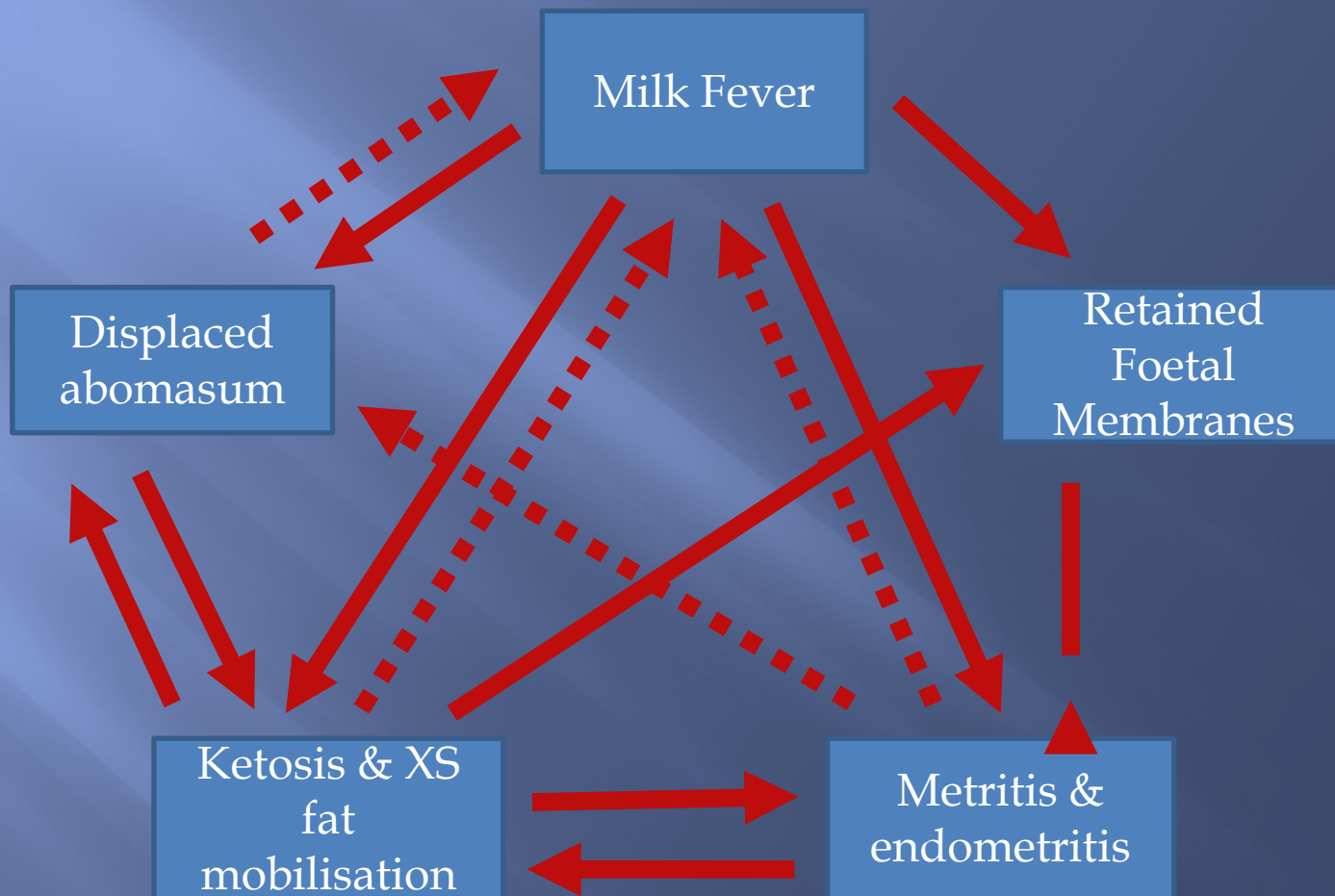






1 case of  
clinical milk  
fever

3-6 cases of  
subclinical  
milk fever



# Milk Fever is a gateway dz

- ▣ A cow with milk fever is more likely to have:
  - Ketosis: 9 times more likely
    - ▣ Lower DMIs
  - LDA: 4 - 8.3 times more likely
    - ▣ Lower DMI; reduced abomasal motility
  - RFM: 4 times more likely
    - ▣ Unknown mechanism? Reduced immune function?
  - Mastitis: 8 times more likely
    - ▣ Reduced teat end tonicity
    - ▣ Calcium is required for immune function

# The cost of milk fever

- Direct costs of clinical cases around £65 / case
- Indirect costs add up to around £200-300 / case
- Cost of subclinical milk fever up to 1ppl!

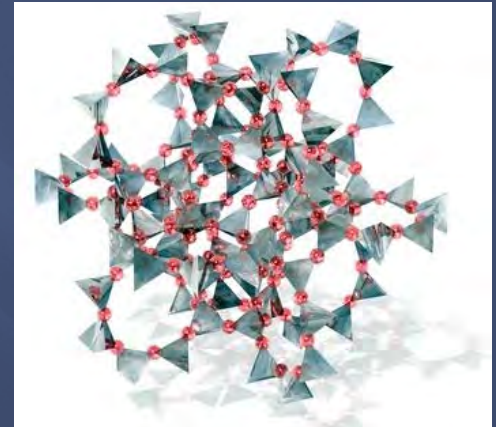
Milk fever	Mild	Severe	Downer / Fatal
Herdsman's time spent on each case (mins)	15	45	180
Cost of herdsman's time	£2.50	£7.50	£30.00
Cost of calcium bottle (+ phosphorus if used)	£2.50	£2.50	£2.50
Proportion receiving injectable drugs (e.g. anti-inflammatory) (%)	10	40	85
Average purchase cost of drugs	£25.00	£35.00	£60.00
Treatment duration (days)	1.0	6.0	7.0
Longest withdrawal period of drugs (days)	2	2	n/a
Cost of treatment per case average	£5.00	£16.50	£53.50
Cost of milk discard / not able to milk per case average	£0.00	£5.90	n/a
Proportion receiving a veterinary visit (%)	0	40	70
Vet time spent on animal (mins)	5	20	25
Veterinary costs	£0.00	£25.33	£50.17
Reduced milk yield (L)	200	500	6,000
Cost of reduced yield	£20.00	£50.00	£600.00
<b>Total direct costs</b>	<b>£27.50</b>	<b>£105.23</b>	<b>£733.67</b>
Proportion of cases mild / severe / fatal (%)	87	5	5
<b>Average cost of a case of clinical milk fever</b>		<b>£65.87</b>	

# Herd-level prevention



# Calcium restriction

- ▣ 'Starve' dry cows of calcium
- ▣ Very difficult to achieve (<20g/day req'd)
  - Forages often high in calcium: 60g/day
- ▣ Some calcium binding agents can help
  - E.g. Zeolite A
  - Potentially can work well
  - Difficult to fit to a transition system?
  - Need to know what you're doing



# The DCAB concept

- ▣ Try to make the blood marginally acidic
  - Or at least not too alkaline
- ▣ **Incr.  $\text{Cl}^-$  and  $\text{S}^{2-}$  and decr.  $\text{K}^+$  and  $\text{Na}^+$** 
  - Creates metabolic acidosis
  - Cow buffers blood with calcium carbonate (bone)
  - Calcium mobilised

# DCAB / DCAD


## ▣ Full DCAB diets

- Feed large quantities anionic salts (MgCl, Ca sulphate)
- Aim for -100 mEq/kg DM
- Dietary calcium 1.0-1.2% DM
- Urine pH: 5.5-6.5
- Requires **regular** urine sampling and monitoring
- **Puts cows on a high tightrope**



# Partial DCAB principal

- ▣ **Minimise high potassium forages**
  - Make big bales / clamp with dry cows in mind
  - Use low potassium forages (maize, wholecrop, straw)
- ▣ **Supply adequate magnesium**
  - Around 0.4% of DMI (e.g. 52g per day)
- ▣ **Lower internal acid-base balance (DCAB)**
  - Brewers grains
  - Magnesium chloride (typically 50-120g)
  - Aim for 0 mEq/kg DM (@ calcium of 0.8% DM)



Make specific dry cow  
forages if possible

Minimise slurry application  
& 'K' fertiliser

Keep grazing short: more  
'K' in the stem than leaf

Later, mature cuts: lower  
'K' and lower energy

# Managing the individual



# Risk management

- ▣ Which are at highest risk?
  - Fat cows
  - Old cows
  - Cows with a difficult calving
- ▣ Give them TLC!
  - Oral calcium, e.g. boluses
  - Plus fluids, pain relief etc.
  - Prevention is easier than cure



# Treating clinical cases

## □ Intravenous calcium

- The lifesaver!
- 400-800ml of 20% solution
- Common to see 40% used: CARE!

## □ Oral calcium

- Once able to hold head up
- Boluses, gels and make-up solutions
- Milking cow ration should be offered



# MF Control at Lower Buckholt

- ▣ **Seasonal calving herd**
  - V. important to get it right first time
- ▣ **Risk management policy for individual cows**
  - 2 x Bovikal<sup>c</sup> boluses at calving for high risk cows
  - i.e. fatties, old cows, 'hard calvings'
  - +/- oral fluids & energy precursors (propylene glycol)
- ▣ **Transition cow ration - prospective**
  - **Limited forages available**
    - ▣ Maize used up
    - ▣ Big bale silage
    - ▣ Hay

## Major Minerals

		Result	Low	Normal	High	Target
Calcium	%	0.35	0.25	>0.5	>0.75	1.00
Phosphorus	%	0.13	0.1	>0.25	>0.40	0.55
Magnesium	%	0.1	0	>0.1	>0.2	0.3
Sodium	%	0.16	0.05	>0.15	>0.25	0.35
Potassium	%	1.17	0	>1.5	>3	4.5
Chloride	%	0.62	0	>0.5	>1.0	1.5
Sulphur	%	0.09	0.05	>0.15	>0.25	0.35
CAB	meq/kg	138.0	0	>200	>400	600

## Trace Elements

Iron	mg/kg	98.2	0	>125	>250	375
Manganese	mg/kg	217.3	25	>75	>125	175
Cobalt	mg/kg	0.06	0	>0.1	>0.2	0.3
Zinc	mg/kg	19.7	0	>40	>80	120
Selenium	mg/kg	0.035	0	>0.04	>0.06	0.12

## Antagonists

Aluminium	mg/kg	89.4	0	>100	>200	300
Lead	mg/kg	0.29	0	>1	>2	3
Molybdenum	mg/kg	0.37	0	>0.5	>1.0	1.5

## Copper

Copper	mg/kg	4.1	4	>8	>12	16
Availability Index	Score	18.0	8	>14	>20	26

## Dry Cow

<i>Feeds</i>	<i>Amount fed (kg as fed/head/d)</i>	<i>kg DM/head/d</i>
Hay Partridge mins	12.000	10.320
Magnesium Chloride	0.080	0.080
Custom DC mineral	0.175	0.172
New blend 18.10	2.000	1.772

<i>Nutrient (Units/d)</i>	<i>Intake</i>	<i>%DM</i>	<i>Requirement</i>	<i>Shortfall//Excess</i>
DM (kg)	12.3		15.8	-3.5
Forage DM (kg)	10.3			
Forage as fed (kg)	12.0			
ME (MJ)	118.1	9.57	129.9	-11.8
ME (%req)	91.0			
Protein (%DM)	13.2			
Protein (g)	1635.5	13.25		
DUP (g)	469.9	3.81		
Starch (%DM)	2.8			
Sugar (%DM)	13.7			
NDF (%DM)	57.3			
NDF from Forage (%DM)	54.3			
Oil (AH) (g)	294.7	2.39		
Calcium (g)	60.8	0.49	39.2	21.5
Phosphorus (g)	42.8	0.35	26.7	16.1
Magnesium (g)	49.1	0.40	15.3	33.9
Potassium (g)	148.1	1.20	68.5	79.6
DCAB (mEq/kgDM)	50.9			

# DairyMet

ID	pH	Ca	P	Mg	K	Na	Cl	TCO2	Cr	SID
34	8.1	1.9	0.1	7.0	152.5	40.5	120.3	118.3	3.1	72.7
112	8.3	0.9	0.5	24.6	202.4	11.8	82.3	261.6	20.1	131.9
506	8.2	5.0	0.5	25.1	254.8	30.5	133.9	268.9	16.1	151.4
95	8.3	3.5	0.4	25.5	236.3	66.1	165.0	267.3	9.6	137.4
527	8.2	1.8	0.4	20.5	247.7	23.7	138.0	259.2	14.2	133.4
<b>MEAN</b>	<b>8.2</b>	<b>2.6</b>	<b>0.4</b>	<b>20.6</b>	<b>218.7</b>	<b>34.5</b>	<b>127.9</b>	<b>235.1</b>	<b>12.6</b>	<b>125.4</b>
		0.5-3.2*		8-26		>12	>22		11	

ID	pH	Ca/Cr	P/Cr	Mg/Cr	K/Cr	Na/Cr	Cl/Cr	TCO2/Cr	Cr/Cr	SID/Cr
34	8.1	0.5	0.0	2.2	48.6	12.9	38.3	37.7	1.0	23.2
112	8.3	0.0	0.0	1.2	10.1	0.6	4.1	13.0	1.0	6.6
506	8.2	0.3	0.0	1.6	15.8	1.9	8.3	16.7	1.0	9.4
95	8.3	0.4	0.0	2.7	24.6	6.9	17.2	27.8	1.0	14.3
527	8.2	0.1	0.0	1.4	17.4	1.7	9.7	18.2	1.0	9.4
<b>MEAN</b>	<b>8.2</b>	<b>0.3</b>	<b>0.0</b>	<b>1.8</b>	<b>23.3</b>	<b>4.8</b>	<b>15.5</b>	<b>22.7</b>	<b>1.0</b>	<b>12.6</b>
Expected		0.2-0.8		>0.8	>8<18	>1				

# The next steps

- ▣ Increased magnesium chloride
  - Increase acidification, overcome K
  - SI decreased DC mineral
- ▣ Increased straw and decreased hay
  - Displacement of the problematic forage
- ▣ Mineral tested some 2<sup>nd</sup> cut BBS
  - Most likely best option if hay unworkable
  - Ready to go if no improvement

Any Questions?

