AGVANCE
Success. Together.

WEBINAR:

Using milk data to drive production & reproduction

PART 2

Presented by SHAUN BALEMI

OVERVIEW

DISCLAIMER: This is general information and only intended to create discussion and further investigation.

1. OVERVIEW of milk data

2. RESEARCH around milk data and reproduction

3. EXAMPLES of how we translate these insights into practical steps farmers can put in place

OVERVIEW OF MILK COMPONENTS

Kg/MS per cow is critical when reading milk component percentages, higher production = lower components

FAT% gives us an indication of rumen stability/performance

PROTEIN% gives us an indication of energy, AA supply and appetite

LACTOSE% gives us an indication of milk production potential

MILK UREA gives us an indication of protein supply, rumen protein utilisation and efficiency

Strong genetic influences however:
JERSEY = Higher fat%, lower protein% & lactose%
HOLSTEIN = Lower fat%, higher protein% & lactose%

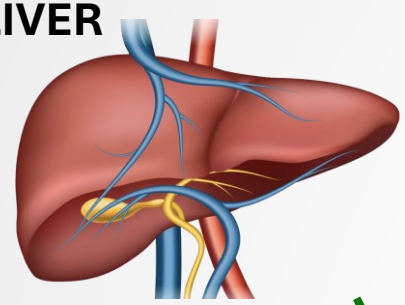
COW GENETIC INFLUENCES

Cow Breed (Live-Weight)	**Jersey** (400kg)	**Kiwi-Cross** (450kg)	**Friesian** (500kg)	**Holstein** (550kg+)
Peak Milk (MS/cow)	2.1kg	2.2kg	2.4kg	2.6kg
Fat%	5.6%	5%	4.7%	4.4%
Protein%	4.4%	4%	3.9%	3.7%
Protein:Fat Ratio	0.79 (0.78-0.82)	0.8 (0.79-0.83)	0.83 (0.80-0.84)	0.84 (0.81-0.85)
Milk Urea Nitrogen	22-28	24-30	26-32	28-34
Rumination (mins) **???**	400+??	440+??	480+??	520+??
Activity (Eating mins) **???**	380+??	420+??	460+??	500+??

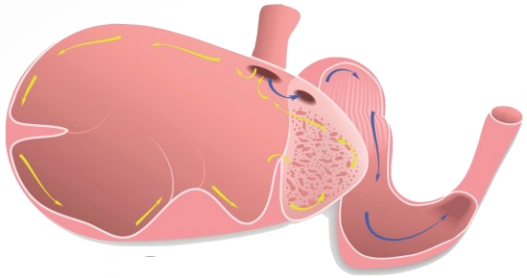
Combination of published & collected NZ Data, verified independently

KEY ELEMENTS TO ALIGN...

LIVER



RUMEN



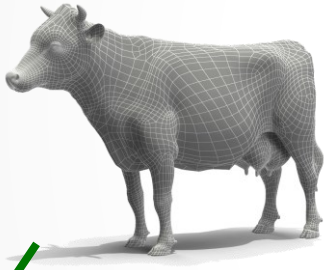
Protein:Fat Ratio

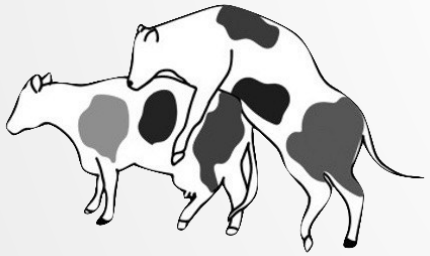
PROTEIN%

LACTOSE%

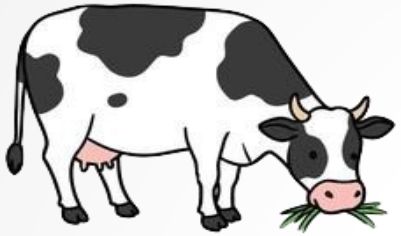
FAT%

MILK UREA





APPETITE



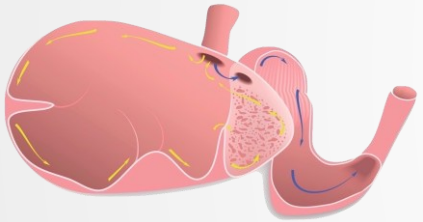
FOOD

"Eat More Signals"
= Corticoids

- Milk Solids - kg/%
- Protein - kg/%
- Lactose - kg/%

Cow
Condition

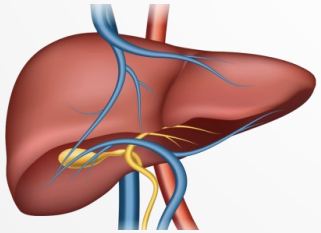
Reproduction
IGF-1



INSULIN

GLUCOGENESIS

FOOD
METABOLITES



TOOLS TO INCREASE FAT%

- STABILISE THE RUMEN ENVIRONMENT!
- Increase EffNDF/fibre
- Pre-grazing residual
- Manage rumen flow rate
- Look at DM% in the pasture
- Rumen buffer/live yeast
- Balance acetate, butyrate, propionate

TOOLS TO INCREASE PROTEIN%

- Drive the rumen and liver engines harder!
- Increase rumen grunt/microbial population intensity
- This is done by feeding a better balanced, punchier feed
- Increase energy density
- Focus on protein balance: NPN/RDP/UDP/AAs
- Protein% runs closely alongside lactose%
- Look at rumen flow rates also, is the digesta in the rumen long enough for efficient microbial digestion?
- Live Yeasts? Methionine? Betaine?

TOOLS TO INCREASE PROTEIN:FAT

- Increase feed quality/energy density
- Increase amino acid supply
- Increase appetite/intakes

To increase protein:fat ratio we need to increase protein%

BUT ensure rumen degradable protein (RDP) is sufficient, otherwise energy will leak out of the protein hole in the bucket!

Ensure fat% is optimum or ideal range is FALSE

Too low (<0.78) – energy potentially lacking

Too high (>0.85) – rumen instability/hot diet

LACTOSE%

INDICATES

- How hot the fire is! High lactose% = greater milk vol
- Feed conversion efficiency (FCE) & diet consistency
- Animal health issues: Udder inflammation, metabolic disorder/ketosis
- Higher lactose% is correlated to reproductive success

Lactose% is driven by energy, particularly glucose supply

Therefore, like protein%, lactose% is linked to feed quality and appetite

TOOLS TO MANAGE MILK UREA

KNOW YOUR ENEMY!

- Herbage testing the feed to establish crude protein (CP) and non-protein nitrogen (NPN) levels
- Are we dealing with excess or lack of nitrogen/rumen degradable protein (RDP), or a lack of energy/starch/soluble sugar?
- RDP = Ammonia, peptides and amino acids - are we dealing with an imbalance?
- Metabolic shifts/subclinical ketosis will also drive up milk urea for a short period

MILK COMPONENTS & REPRODUCTION

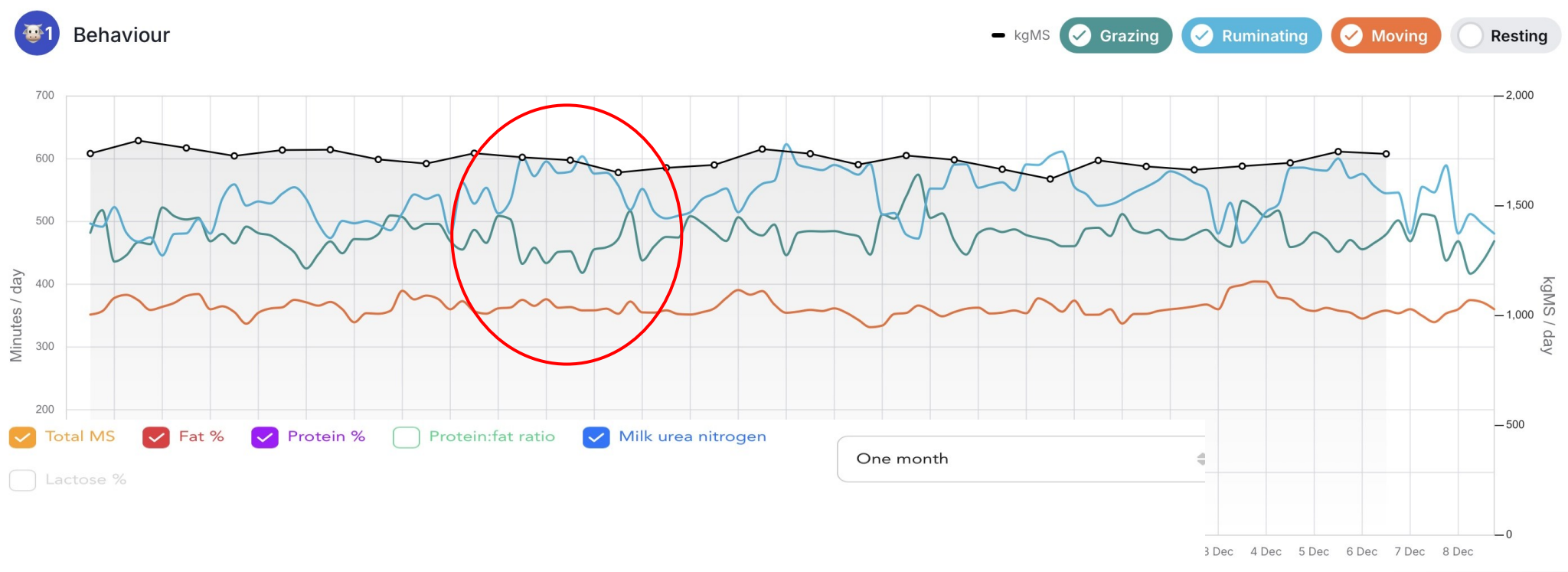
TRANSITION – STRONG APPETITE – NEB – MINIMAL CONDITION LOSS Wathes et al., 2007

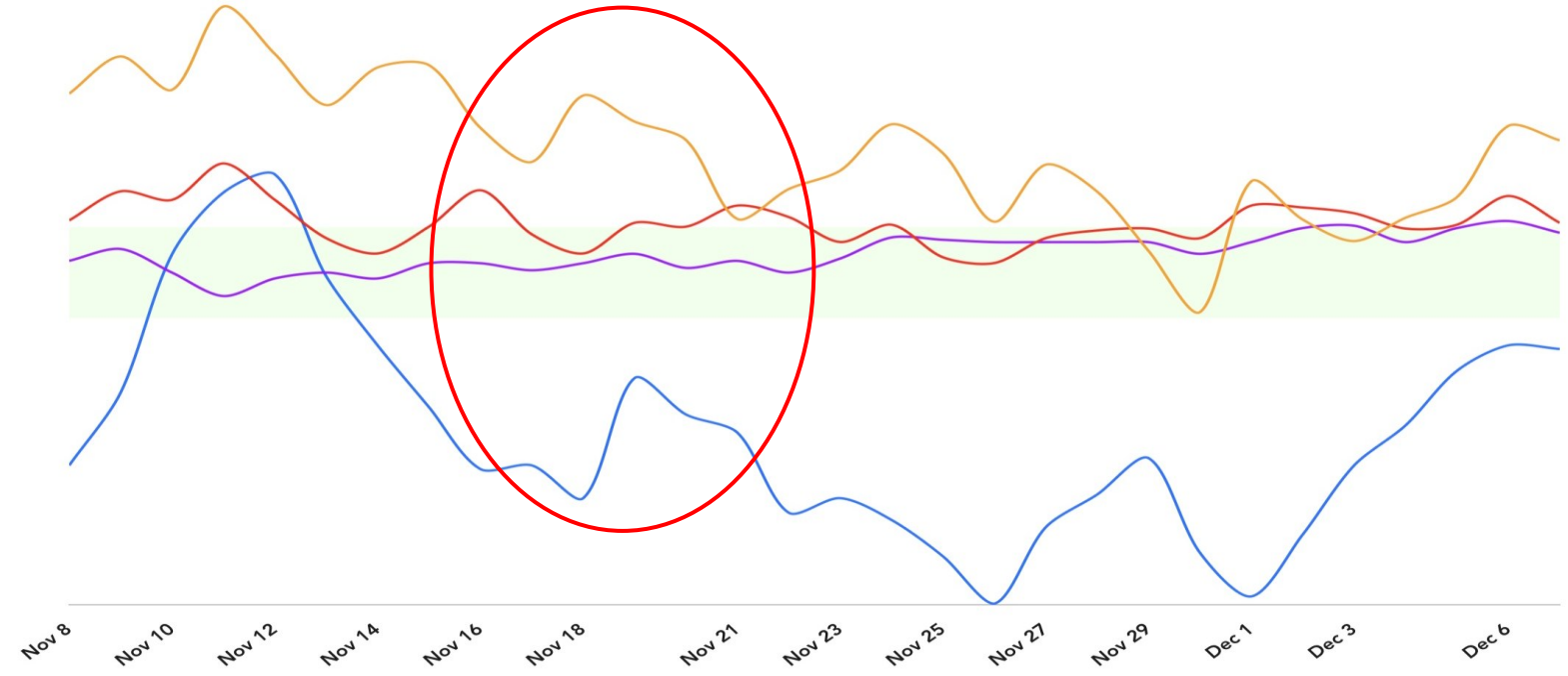
NEB influences protein:fat ratio – Insulin-like growth factor Negussie et al., 2013, Toni et al., 2011, Cbezaas-Garcia et al., 2021

Morton et al., 2017 & Martinez-Castillero et al. (2021)
Found a positive correlation between milk protein% and reproductive success

Carty et al., 2020
Found that cows with lower milk lactose% had, on average, 10 days longer to first cycle

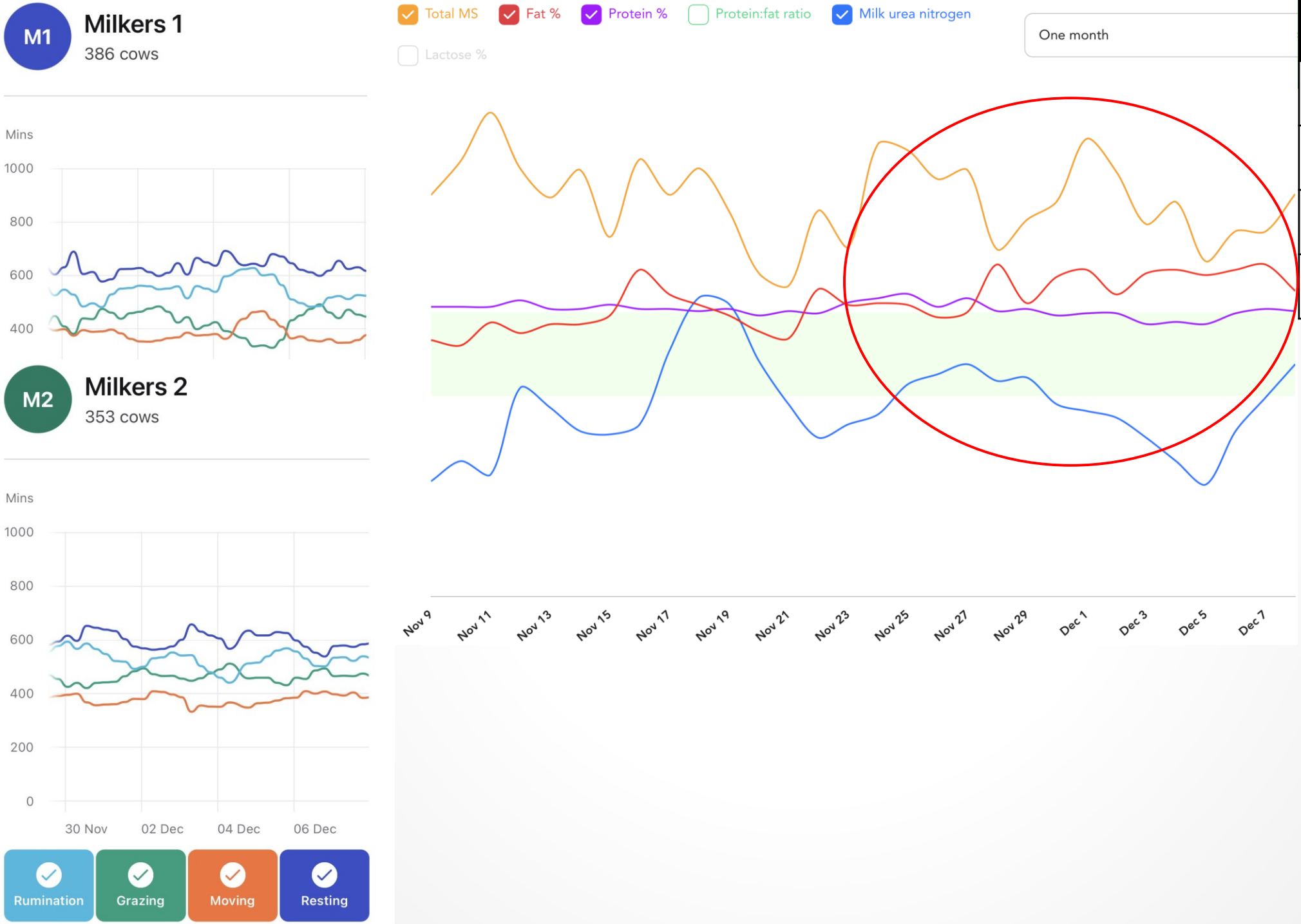
Don’t just look at %, the total kg of protein and lactose is also important as cow numbers are changing and DIM are increasing.





DATE	17th Nov	24th Nov	1st Dec
Cover	2430	2450	2390
Growth	67	68	68
Pre-Graze	3300	3400	3100
Post-Graze	1680	1680	1600

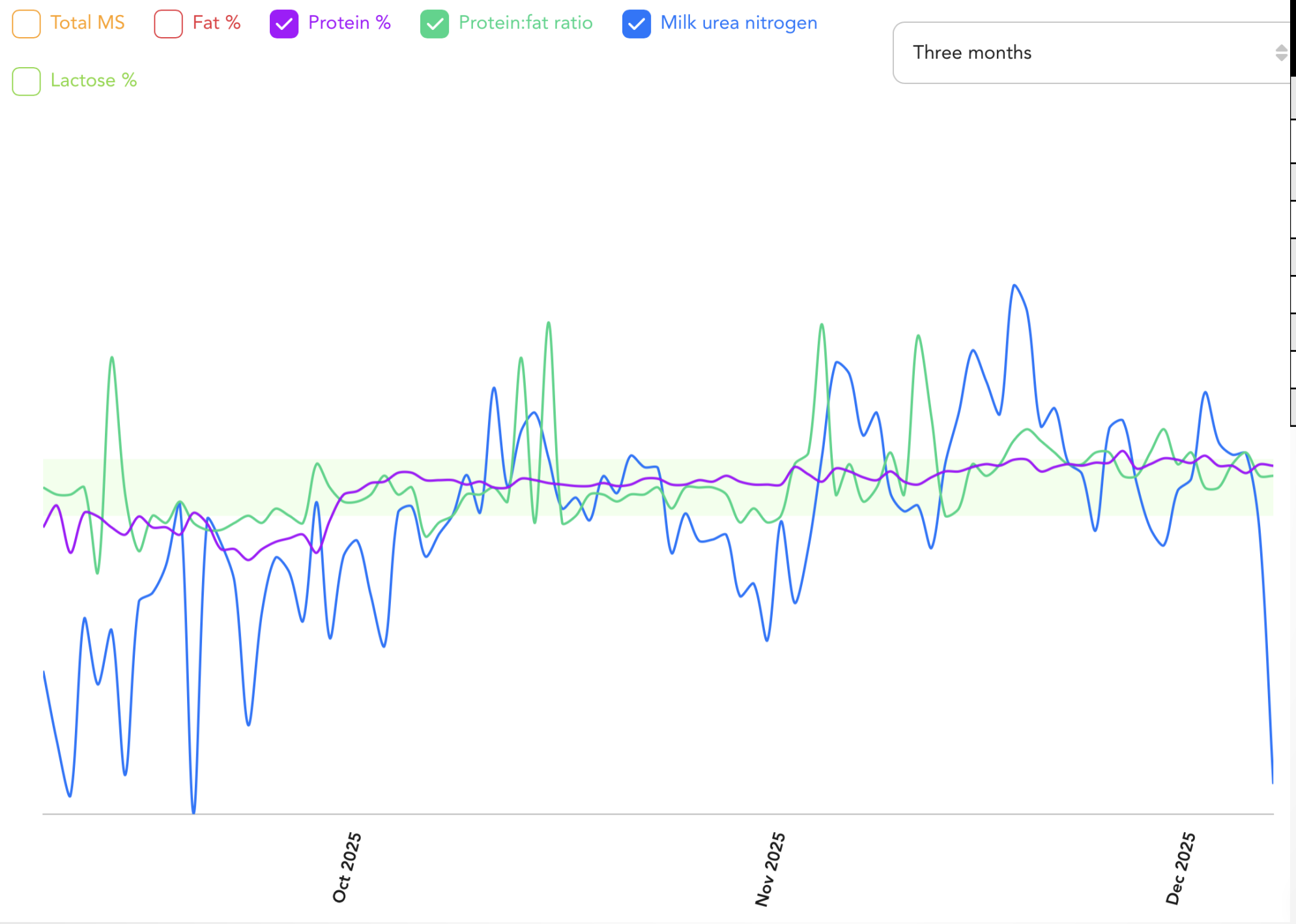
Lost Quality
+PKE



DATE	17th Nov	24th Nov	1st Dec
Cover	2900	2350	2300
Growth	70	70	70
Pre-Graze	3300	3100	3100
Post-Graze	1700	1600	1600

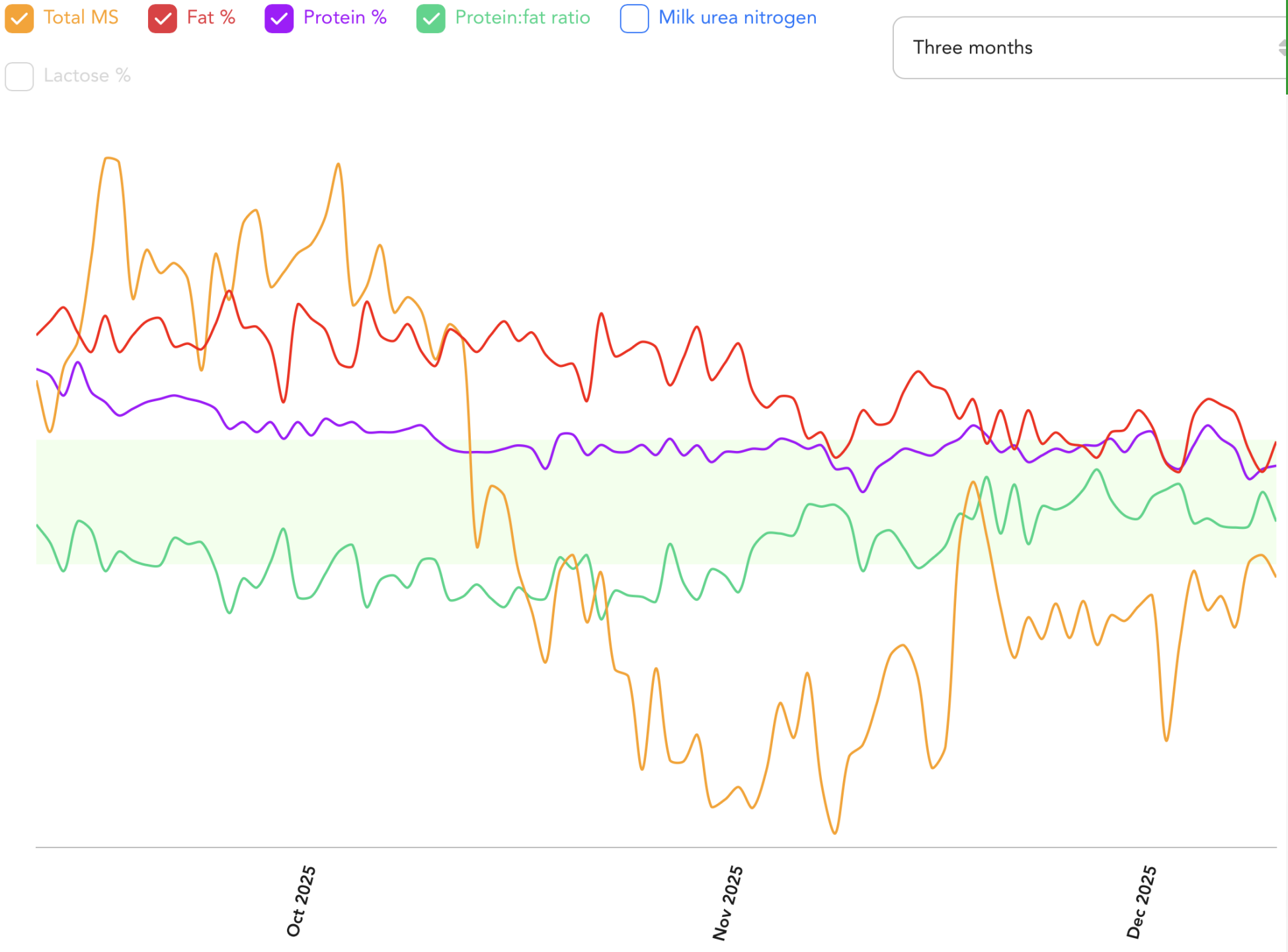
Kept Quality

Live Yeast Included



DATE	29th Sept	6th Oct	13th Oct
Cover	2320	2280	2310
Growth	60	61	70
Pre-Gr	2900	3000	2900
Post-Gr	1600	1550	1500
Pasture	14	14	15.5
Silage	2	2	0
Wheat	2	2	2
Meal	3	2.4	2.4
Soya	0	0.6	0.6

Correct Protein



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Comparison is key

Total MS Fat % Protein % Protein:fat ratio Milk urea nitrogen

Lactose %

Season to date

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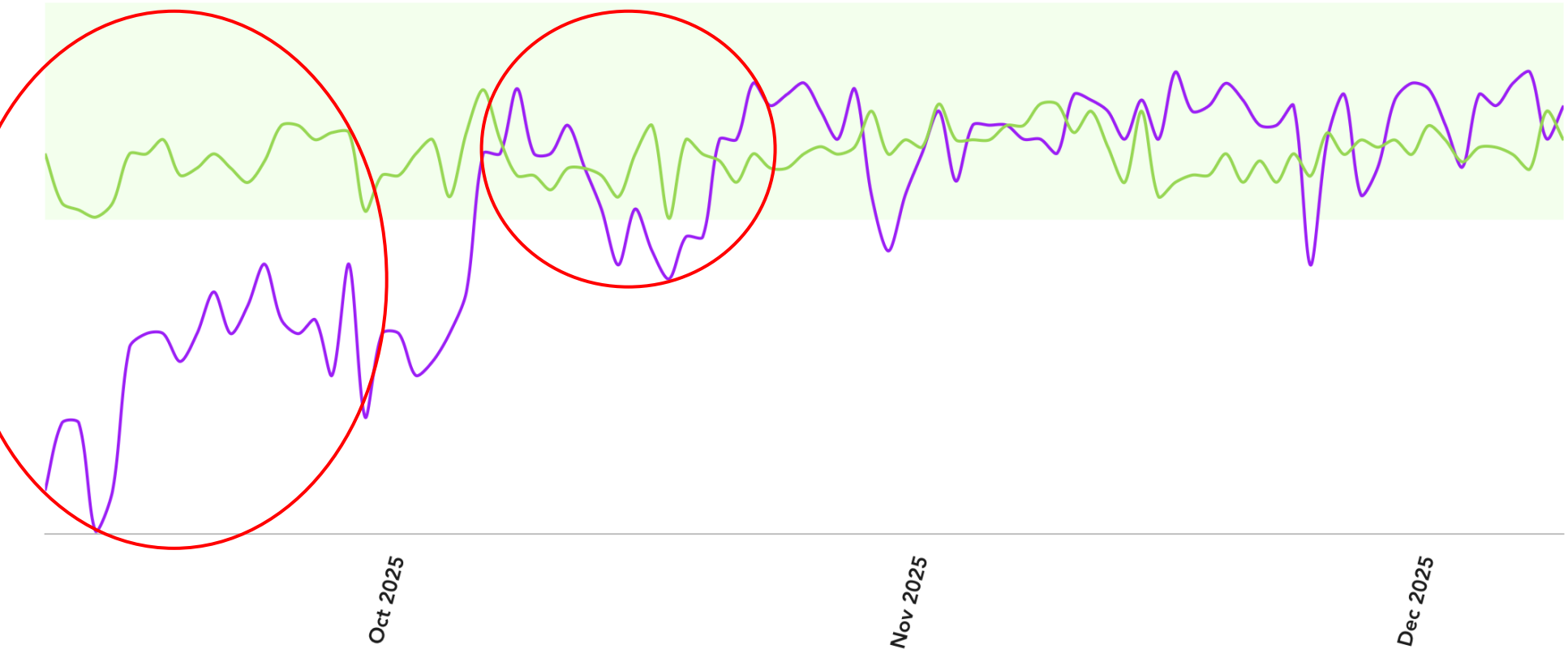
2 x In-shed Feeding System Failed



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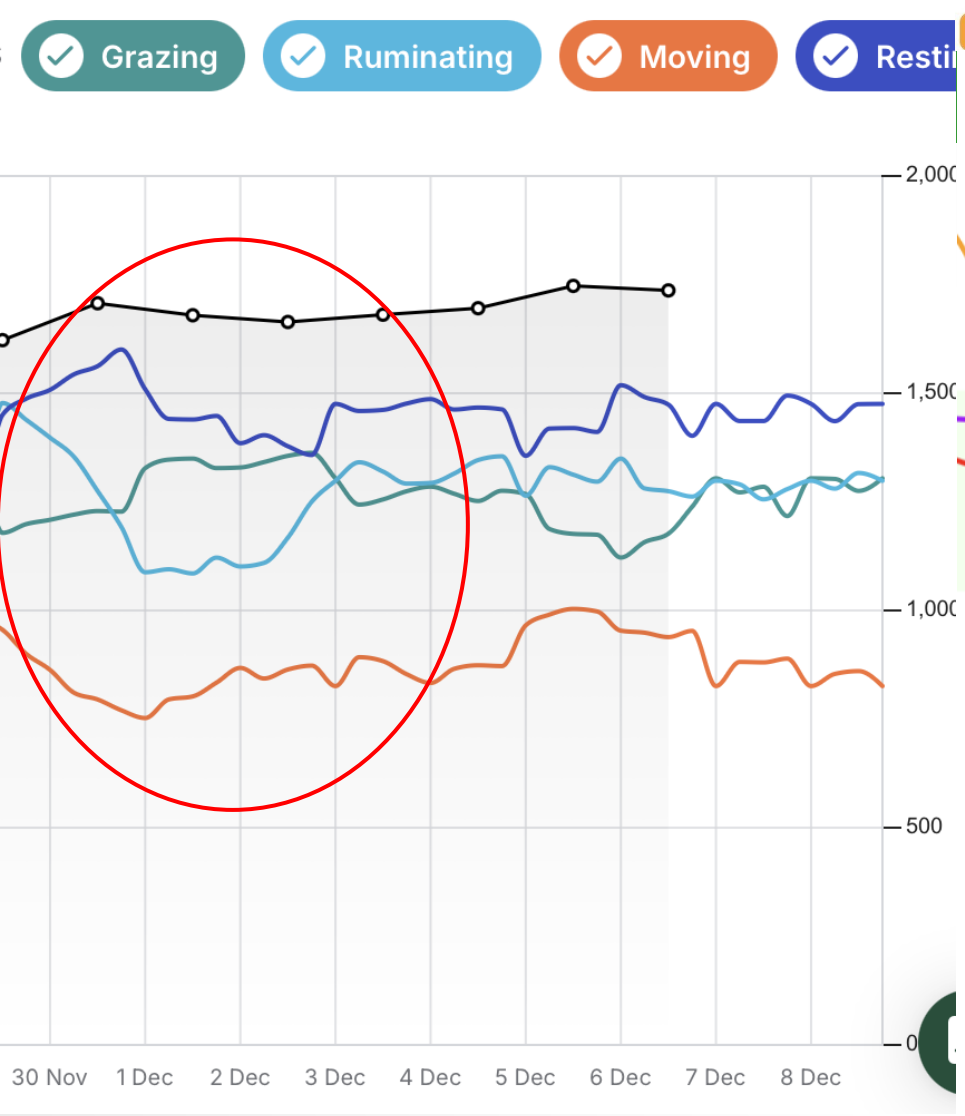
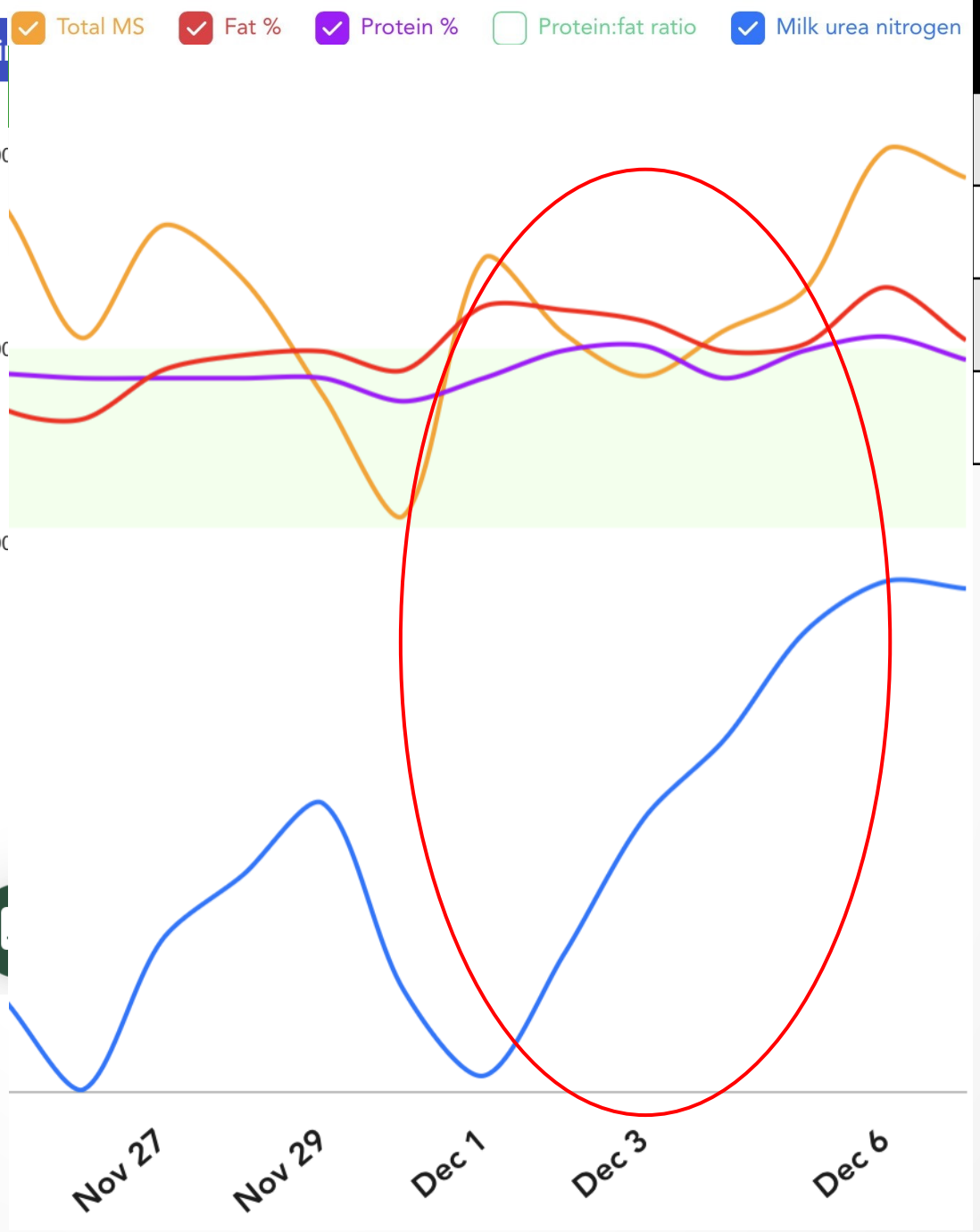
In-Shed Feed Changed

No Change in Rumination





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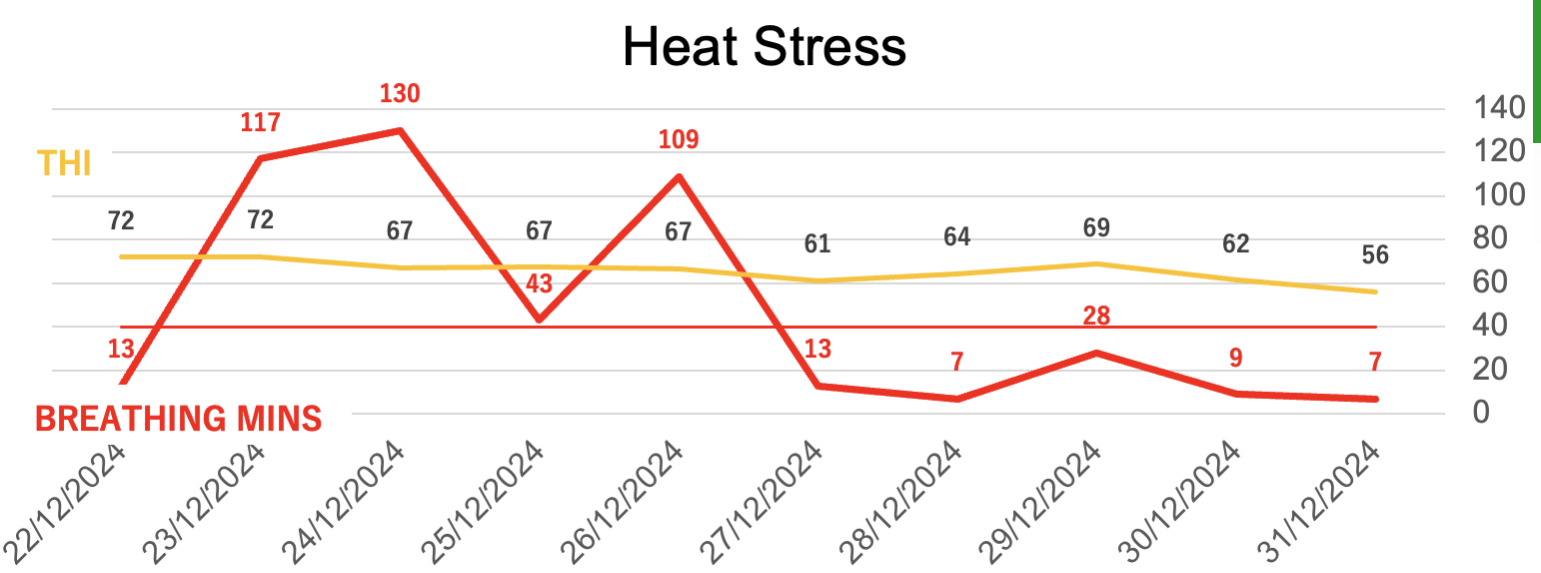
Heat Stress

Heat Stress


Heat Stress
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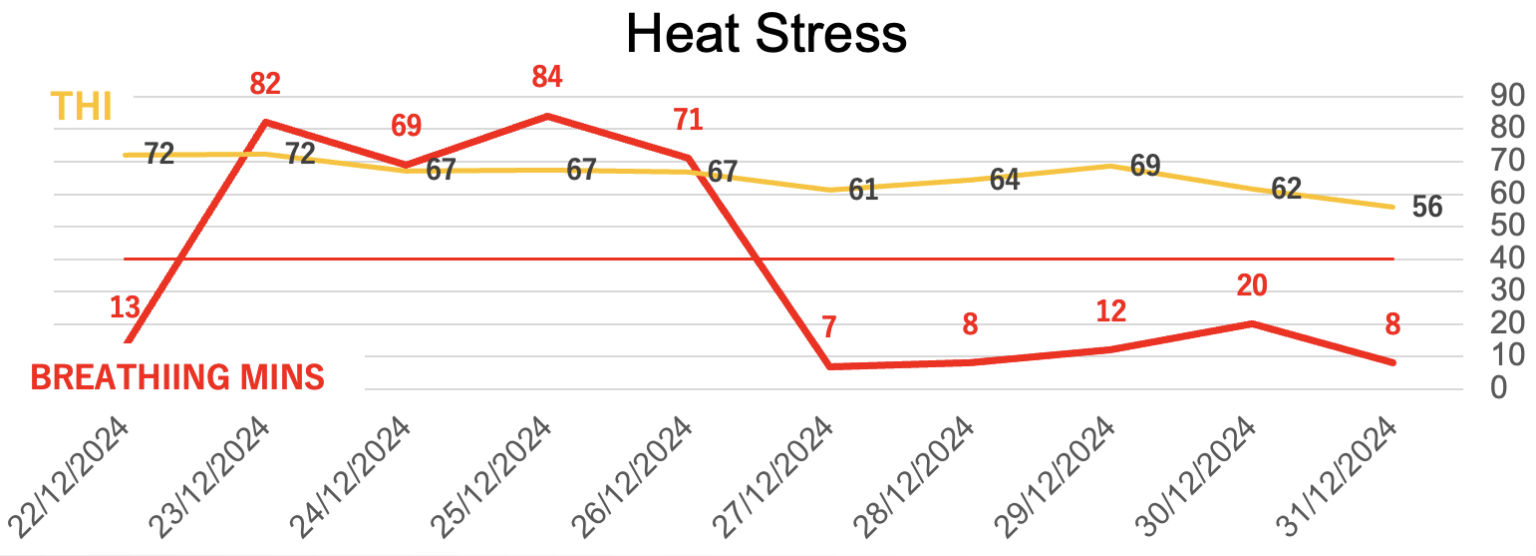
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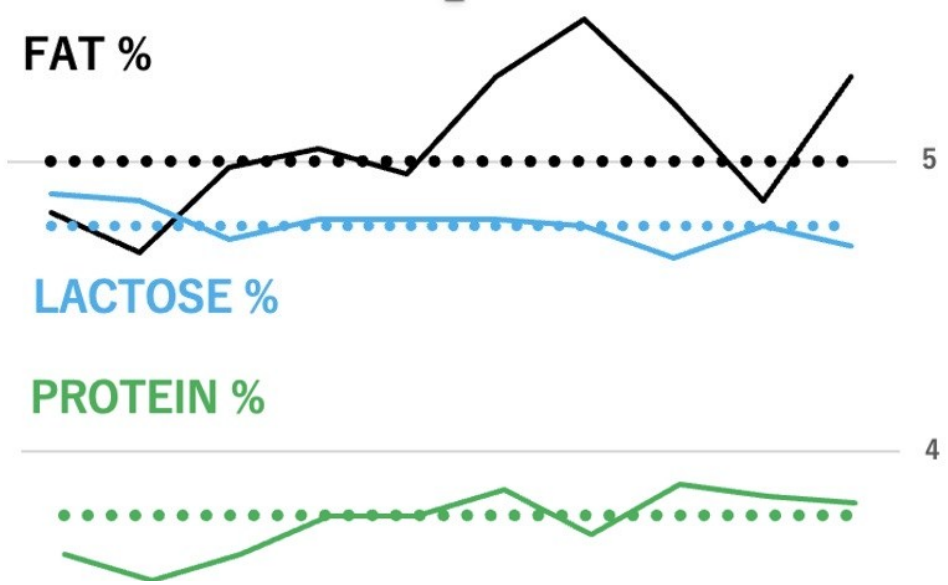
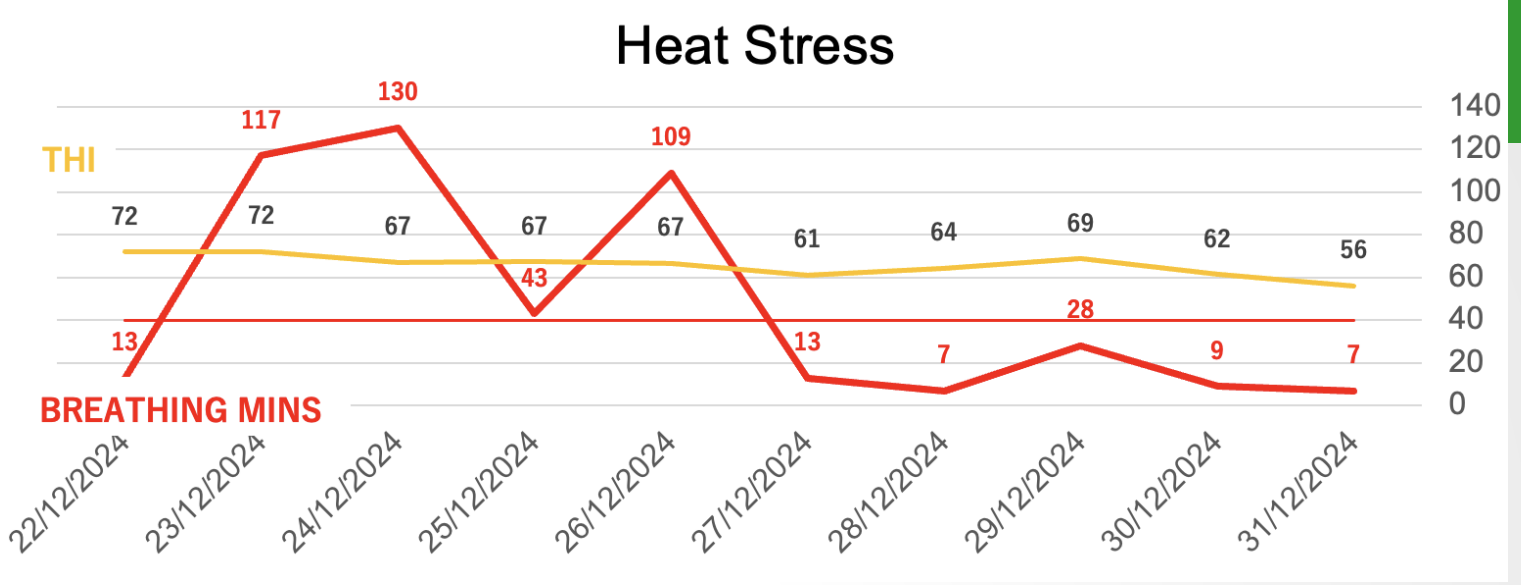

FAT %
LACTOSE %
PROTEIN %
5
4


Heat Stress
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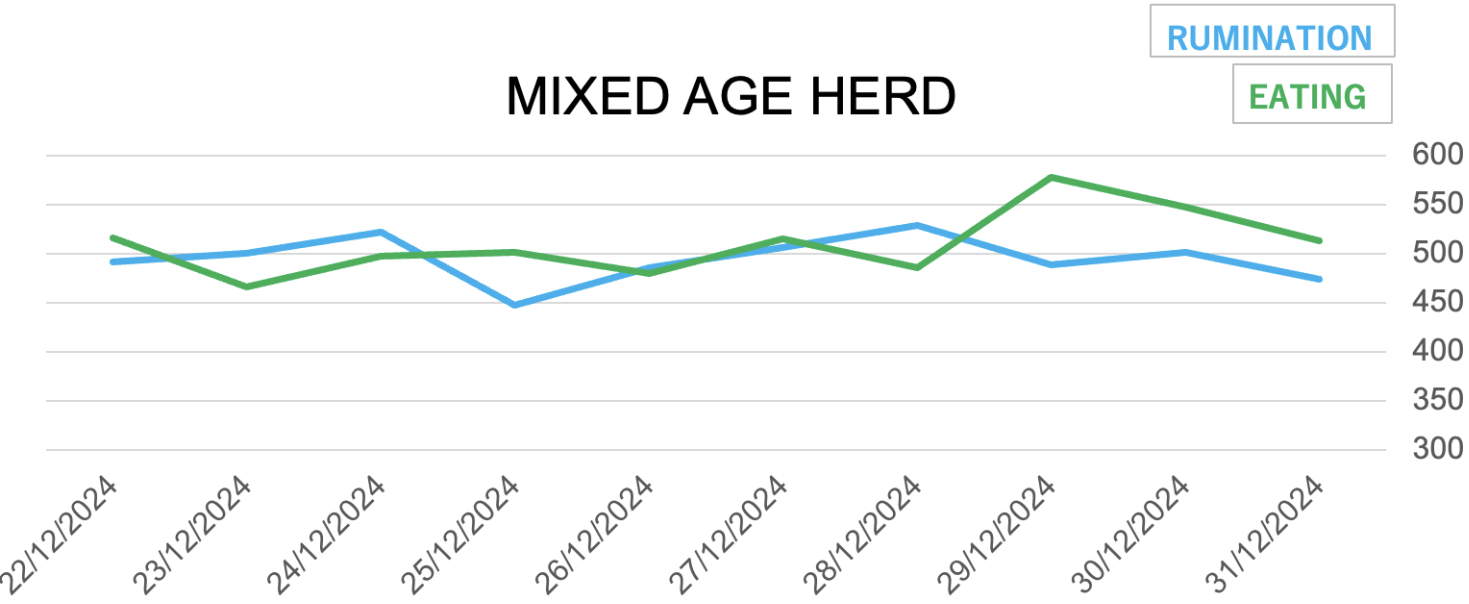
MIXED AGE HERD
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