



# Feed efficiency - Feeding

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# Outline

- What is feed efficiency?
- Main Influences
- How to improve feed efficiency
- 1000kg solids/lactation



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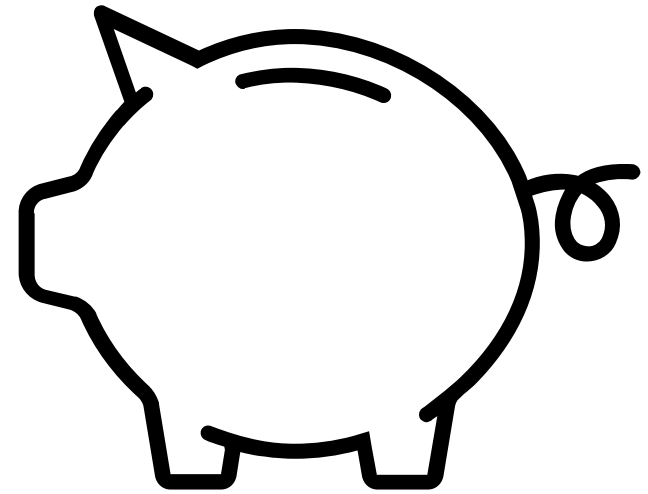


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# Did you know?

Improving feed efficiency  
by 1% could earn a 200-  
cow dairy farm

£10,950 per year



# Feed Efficiency

$$\frac{ECM \text{ kg}}{DMI \text{ kg}}$$

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**slido**

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# Why do you think Feed Efficiency is important?

① Start presenting to display the poll results on this slide.

# Main Influences

## Cow factors

- Stage of lactation
- Age
- Health Status
- Genetics
- Rumination
- Sorting

## Feed factors

- Balanced diet
- Digestibility
- Feed Presentation
- Forage quality and quantity
- Water availability

## Management factors

- Overcrowding
- Group changes
- Feed delivery
- Milking frequency
- Feed availability



# Feed Efficiency Benchmark

Group of cows	Days in Milk	Feed Efficiency Benchmark* (Hutjens, 2010)
One group, all cows	150 to 225	1.4 to 1.6
1 <sup>st</sup> lactation group	< 90	1.5 to 1.7
1 <sup>st</sup> lactation group	> 200	1.2 to 1.4
2 <sup>nd</sup> + lactation Group	< 90	1.6 to 1.8
2 <sup>nd</sup> + lactation Group	> 200	1.3 to 1.5
Fresh cow Group	< 21	1.3 to 1.6

\*Hutjens, 2010 - represents 3.5% FCM.

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# Whole Farm Feed Efficiency

P Garnsworthy, Nottingham Uni

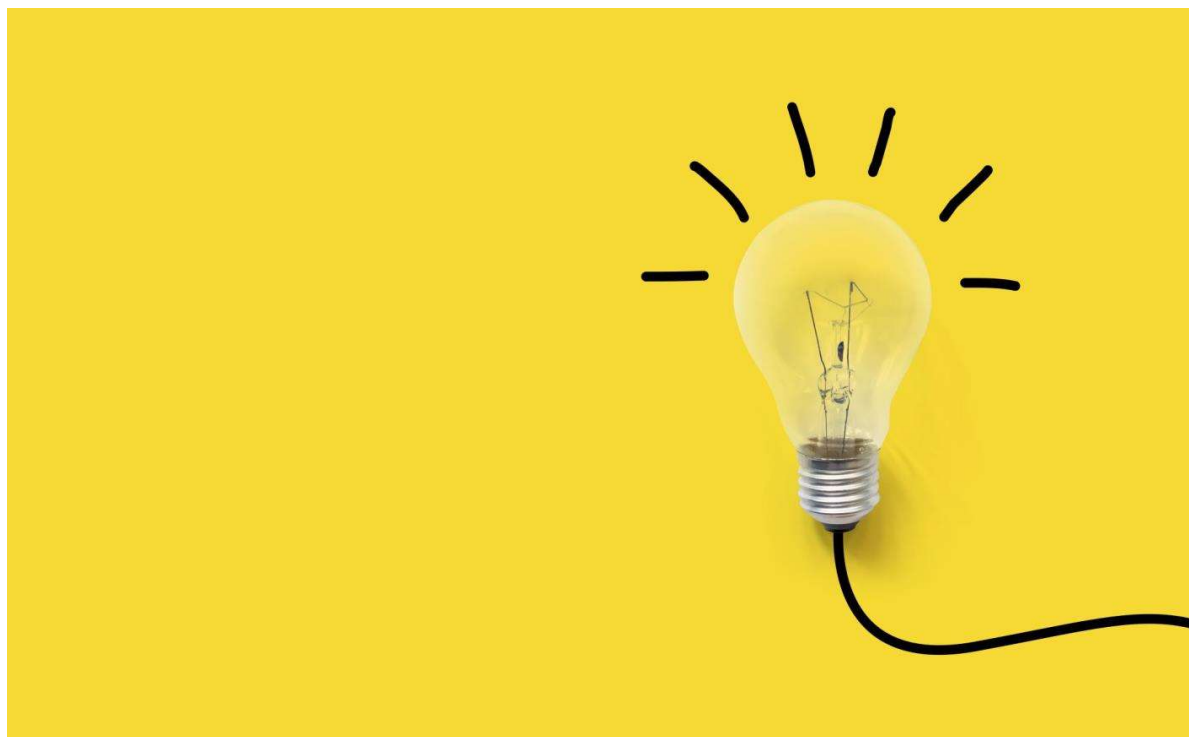
- “Fertility, efficiency, emissions and profit are all linked”
- Higher yielding cows are biologically more efficient
- Fertility needs to be optimum too
- “Sustainable Intensification” – does not mean *changing* systems
- Age at first calving and number of heifers is important

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# Strategies for Improvement

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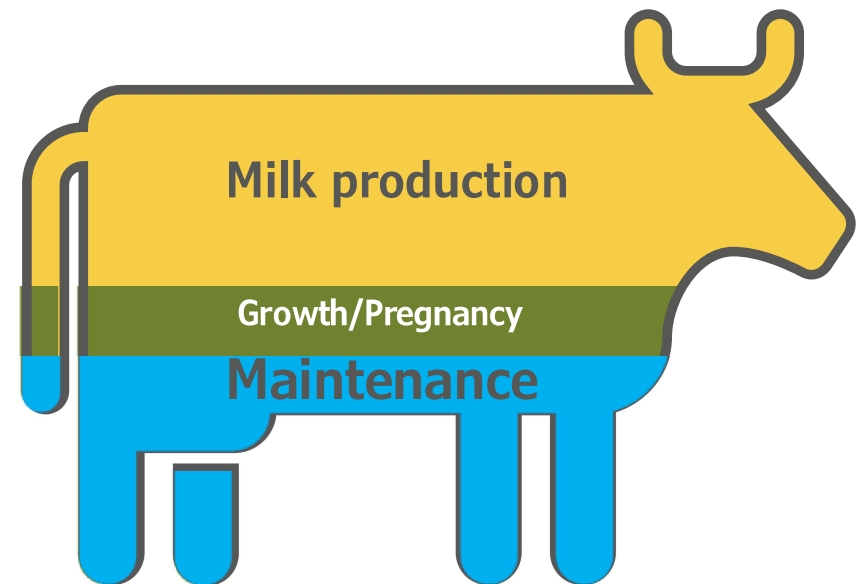


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# Optimise dry matter intake

Can my cows eat more?

1kg extra dry matter = 2-  
2.5kg extra milk per day



# More feed means more milk

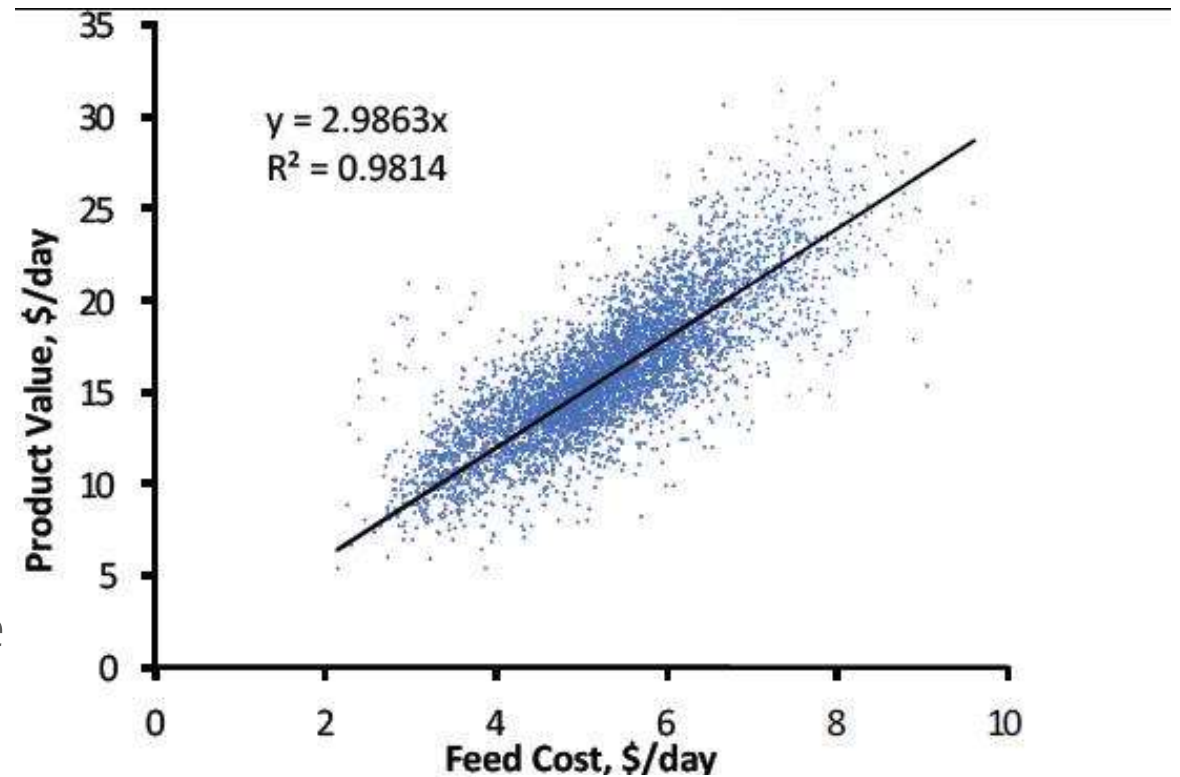
Feed at 25p/kg DMI

Milk at 40ppl

+1kg dry matter = 2kg milk

Extra margin per cow per day 55p

- Increased DMI is positively related to income!
- Some cows need less feed for the same amount of product



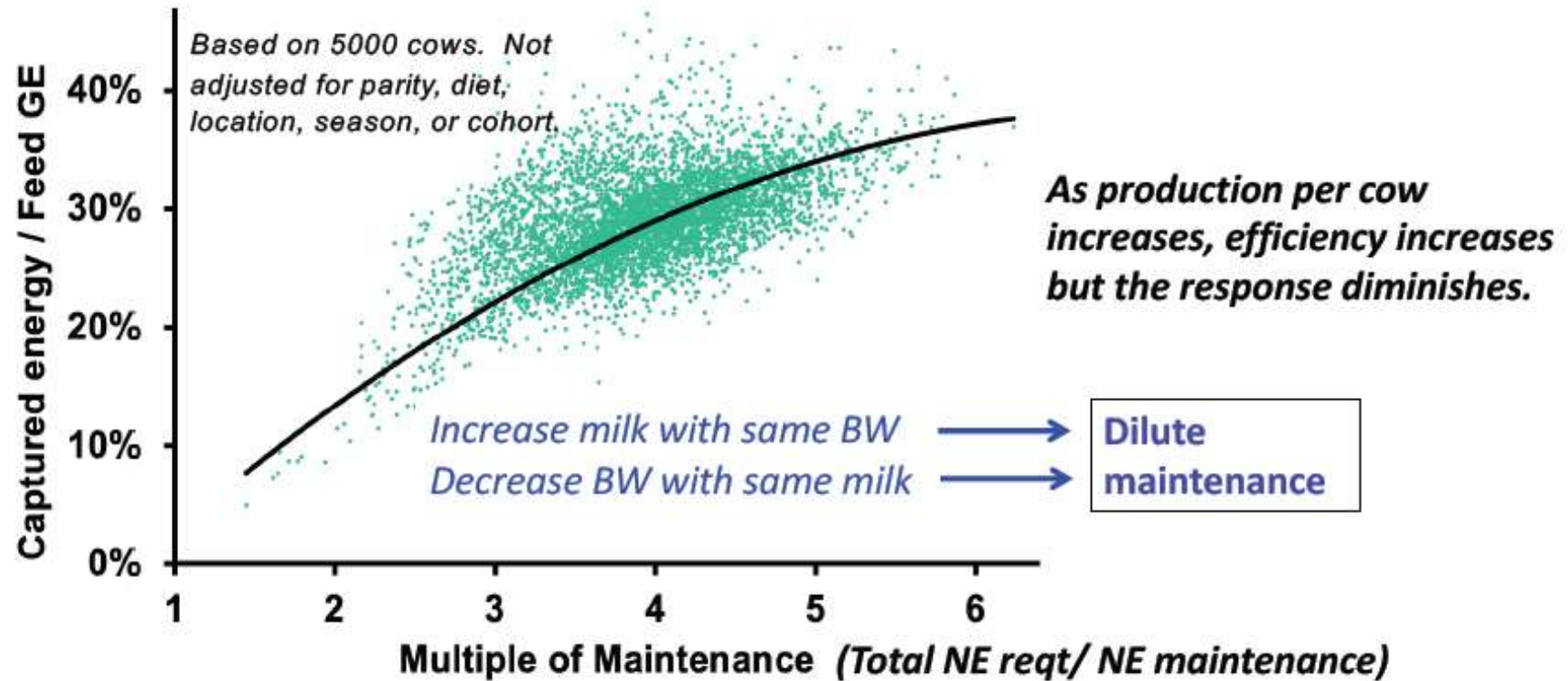
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## Increased productivity dilutes out feed for maintenance



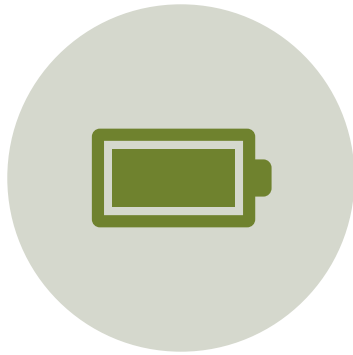
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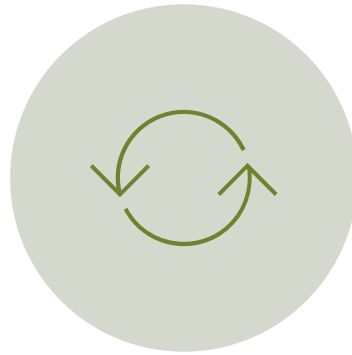


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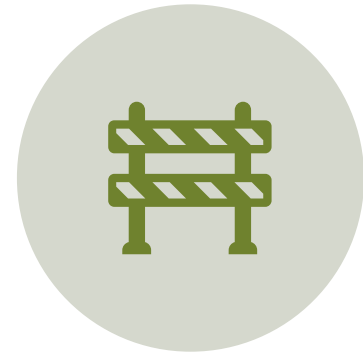
# Why do cows stop eating?



PHYSICAL FILL



METABOLIC FEEDBACK



NON-NUTRIENT  
FACTORS

# Forage

- Digestibility
- Quality
- Particle size



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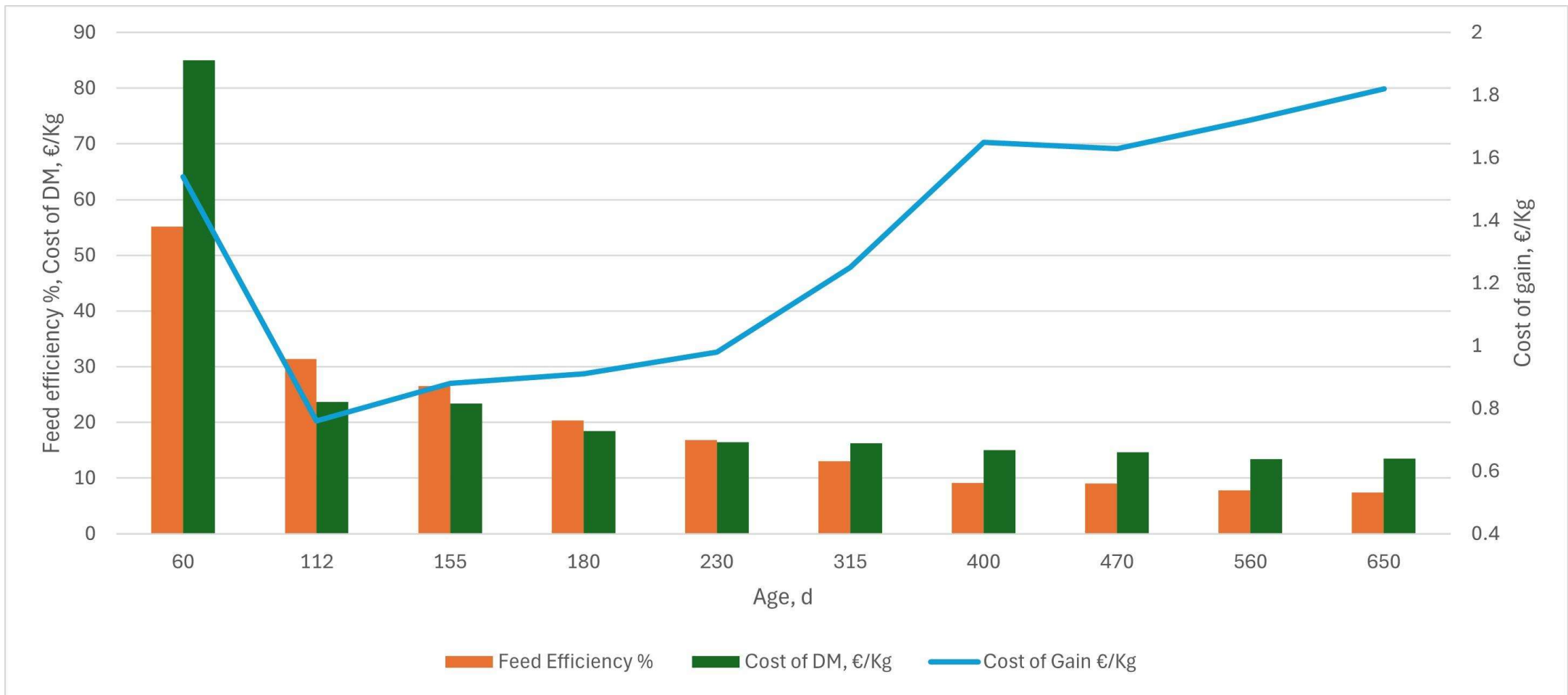
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# Keep the rumen healthy – NDF level

- First 3 weeks postpartum = ++
- High inclusion of short fibre feeds = +++
- Faster clearance of forage NDF = +++
- High inclusion of rapidly fermentable starch = +
- Supplemental rumen buffers = -
- Grain consumed rapidly and infrequently = ++
- Excellent quality control in feed management = -





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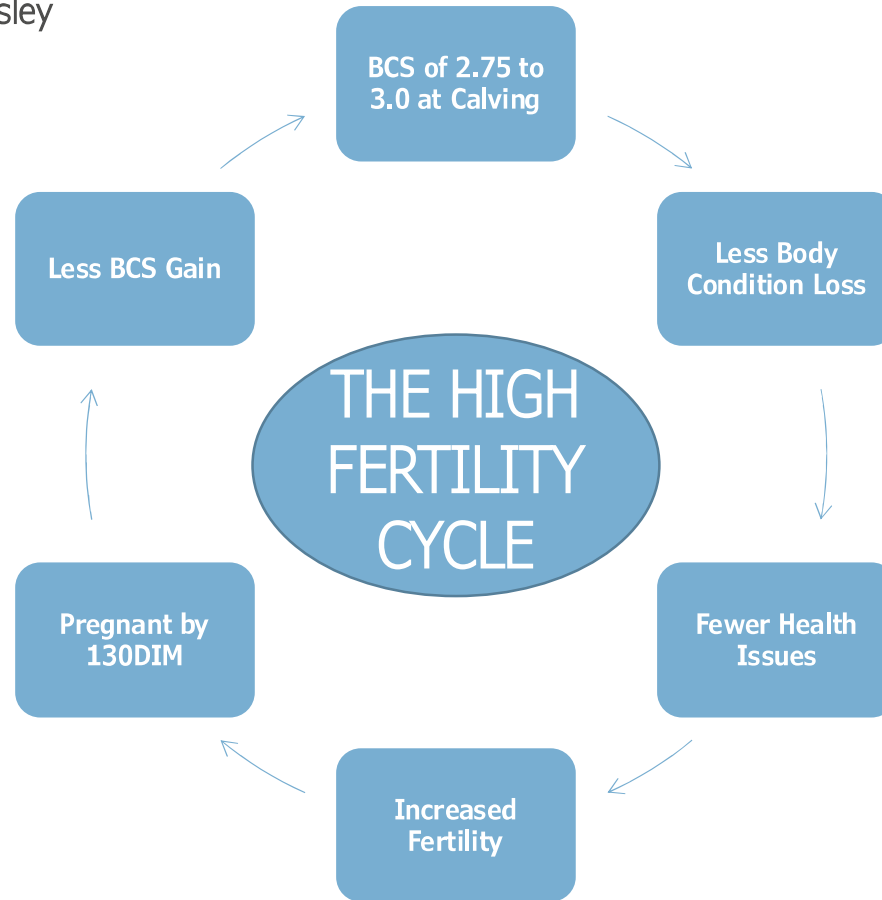


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# The High Fertility Cycle

P. M Fricke, M. C. Wiltbank and J. R. Pursley



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# 1000kg Case study

Farm ID	Average Total solids per lactation (kg)	Total solids/cow/day (kg)	Diet	Milk from forage (kg)	% forage in milking cow diet	Milking Feed efficiency (Kg ECM/Kg DMI)
1	990	3.1	1 TMR	3,677	50% (14.5kg DMI)	1.60
2	900	3.2	1 TMR	1,982	44% (12.9kg DMI)	1.46
3	1030	3.2	PMR + feed to yield	5,011	60% (17.0kg DMI)	1.53
4	1060	3.2	1 TMR	4,586	53% (15.0kg DMI)	1.60
5	890	2.8	PMR + feed to yield	1,492	49% (12.0kg DMI)	1.64
6A	1020	3.2	1 TMR	3,009	53% (13.5kg DMI)	1.67
6B	1000	2.9	1 TMR	2,813	53% (13.5kg DMI)	1.62
7	960	3.1	1 TMR	921	44% (13.2kg DMI)	1.52

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# Take home message

- Improving feed efficiency is directly linked to profit
- Once maintenance is supplied every extra MJ of feed will increase milk production
- Optimise dry matter intake on your farm
- Forage quality is key but are you feeding correctly to optimise rumen healthy?
- Attain and remain in the high fertility cycle



# Thank you!!

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