



Dairy Australia DairyLive event, December 2009

Strategies to Optimise Feed Conversion Efficiency in the 5 different dairy feeding systems

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Strategies to Optimise Feed Conversion Efficiency

“If you don’t measure it, you can’t manage it” Steve Little

***“Farmers with high FCE are continually monitoring
their performance” Bill Wales***

General aims across all 5 feeding systems:

- **Optimise total daily feed intake**
- **Maintain high feed quality**
- **Maintain good rumen function**
- **Minimise feed gaps throughout the year**
- **Minimise feed wastage**





Feeding Systems Used by Aust. Dairy Farmers

1. Pasture + other forages + low grain / conc. feeding in bail

(Grazed pasture + other forages + up to 1.0 tn grain / conc. in bail)

2. Pasture + other forages + mod.-high grain / conc. feeding in bail

(Grazed pasture + other forages + > 1.0 tn grain / conc. in bail)

3. Pasture + PMR +/- grain / conc. feeding in bail

(Grazed pasture for most or all of year + PMR on feed pad +/- grain / conc. in bail)

4. Hybrid system

(Grazed pasture for < 9 mths per year + PMR on feed pad +/- grain / conc. in bail)

5. TMR system

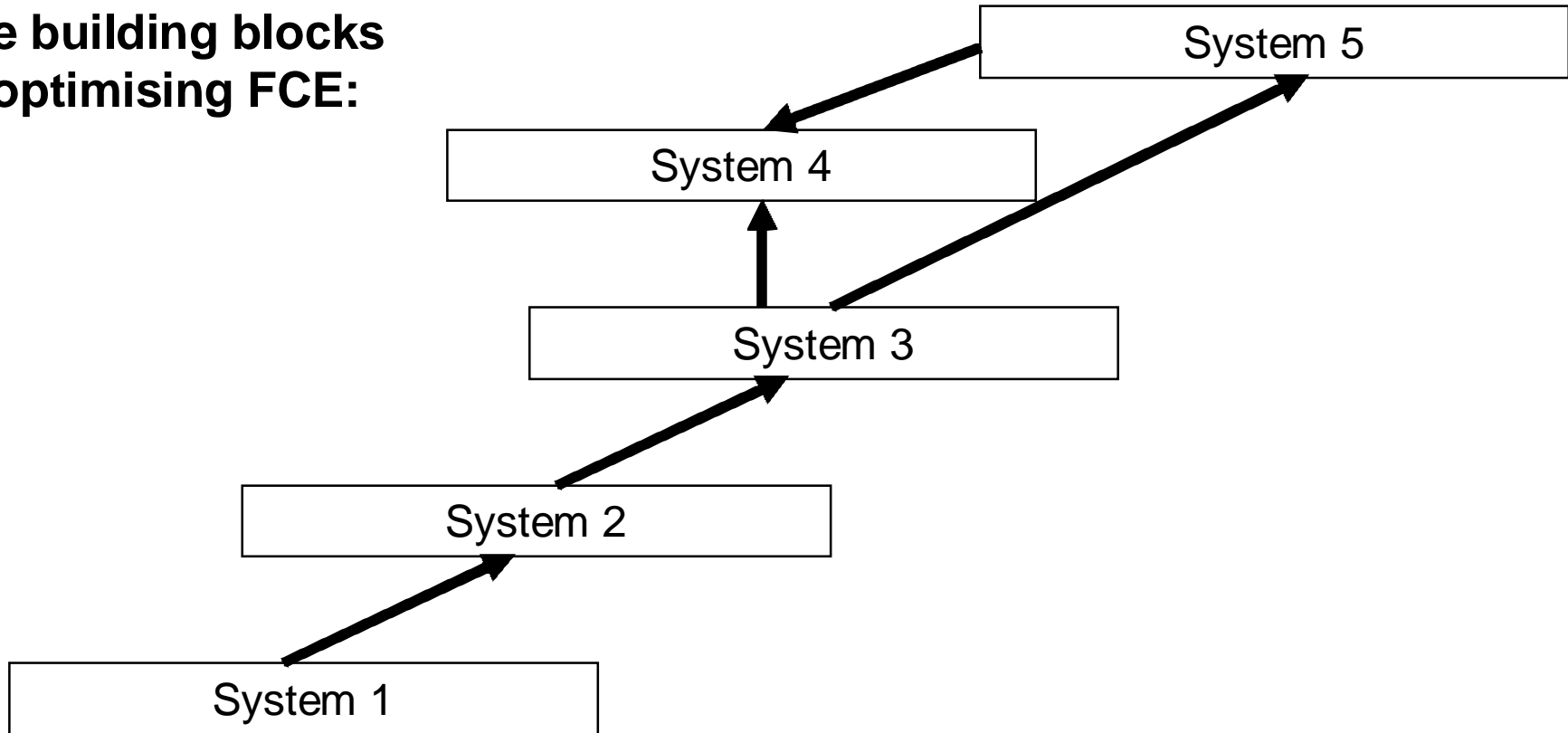
(Zero grazing. Cows housed and fed TMR)





Strategies to Optimise Feed Conversion Efficiency

The building blocks of optimising FCE:





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Feeding system 1:

Pasture + other forages + low grain / conc. feeding in bail

- Select suitable pasture species/cultivars and grow pasture to farm's potential (as dependent on climate, soil fertility, water, nitrogen etc.)
 - Use appropriate stocking rate to manage pastures effectively
 - Optimise pasture intakes (high pasture allowances, high digestibility for as much of the year as possible)
 - Use grain and other supplements to alleviate seasonal feed gaps and extend lactations
 - Provide adequate effective fibre in the diet at all times to promote chewing and saliva production
 - Minimise energy losses eg. from excessive walking, excessive body condition changes during year
 - Manage heat stress effectively in hot weather to minimise the decrease in daily feed intake and increase in energy required for maintenance
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- A decorative graphic at the bottom of the slide consisting of a blue wavy shape on top of a green wavy shape, resembling a stylized landscape or field.



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Feeding system 2:

Pasture + other forages + mod.-high grain / conc. feeding in bail

As per system 1 (with lower pasture allowances) **PLUS**

- Greater focus on adequate effective fibre in the diet to promote chewing and saliva production
- Gradual changes to grain feeding rates (an individual cow ID feeding system in the dairy assists with this)
- Use rumen modifiers, buffers, neutralising agents, probiotics
- Transition feeding program before calving
- Protein and mineral supplements
- Minimise feed wastage (especially fodder)

+ / -

- Use slower fermenting grains such as corn
- 3 times a day milking (especially if using high grain feeding rates)





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Feeding system 3:

Pasture + PMR +/- grain / conc. feeding in bail

As per system 2 PLUS:

- Greater focus on:
 - Quality of fodder, grain and other supplements (used in PMR)
 - Formulation of a nutritionally balanced diet (pasture plus PMR)
- Correct additions and processing of feed ingredients in mixer wagon
- Incorporate most of grain in PMR rather than feed in the bail
- Sequence PMR feeds carefully each day (1X or 2X) with grazing and bail feeding to optimise intakes and maintain rumen as stable as possible
- Manage feed-pad well:
 - Adequate feed space and access to drinking water
 - Fresh, highly palatable feed at all times
 - Feed sorting and wastage minimised



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Feeding system 4:

Hybrid system (Grazed pasture for < 9 mths per year + PMR on feed pad +/- grain / conc. in bail)

As per systems 2 / 3 & 5 PLUS:

- Correct timing and a smooth, gradual transition:
 - From pasture plus supplements to full Total Mixed Ration (TMR) in late spring
 - From TMR back to pasture plus supplements in Autumn





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Feeding system 5:

TMR system (Zero grazing. Cows housed and fed TMR)

As per system 3 PLUS:

- Greater attention to:
 - Diet formulation, with more focus on amino acids and minerals, and possible use of fat supplements
 - Keeping feed as fresh as possible (1 versus 2 mixes per day)
- Push feed up to cows several times per day
- Other strategies to promote high daily feed intakes and minimise feed wastage





Feed Conversion Efficiency Targets for Different Feeding Systems

What should we be aiming for?

Annual milker FCE:

		kgs milk / kg feed DM	
Feeding system		^ Achievable target	* Take action if less than
1	Pasture + forages + Low grain in bail	1.0	0.9
2	Pasture + forages + Mod-High grain in bail	1.2	1.1
3	Pasture + PMR +/- grain in bail	1.3	1.2
4	Hybrid system	1.4	1.3
5	Total Mixed Ration (Zero grazing)	1.6	1.45

^ Achievable in well managed systems – min. wastage, good quality feed, min. feed gaps, good rumen function

* Trigger level for action. If herd's FCE is less than this figure, further investigation is warranted.

Note: Kgs milk = Energy corrected milk (ECM), standardised with respect to fat and protein concentrations



Feed Conversion Efficiency Targets for Different Feeding Systems

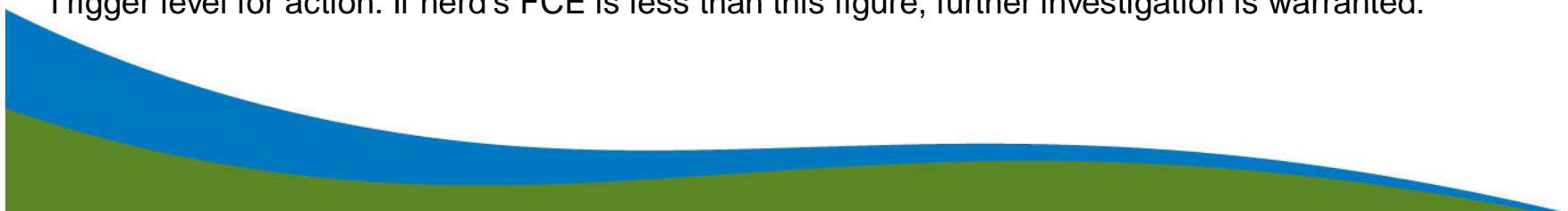
What should we be aiming for?

Annual milker FCE:

		grams MS / kg feed DM	
Feeding system		[^] Achievable target	*Take action if less than
1	Pasture + forages + Low grain in bail	75	68
2	Pasture + forages + Mod-High grain in bail	90	83
3	Pasture + PMR +/- grain in bail	100	92
4	Hybrid system	105	98
5	Total Mixed Ration (Zero grazing)	120	109

[^] Achievable in well managed systems – min. wastage, good quality feed, min. feed gaps, good rumen function

* Trigger level for action. If herd's FCE is less than this figure, further investigation is warranted.





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What next?

If annual milker FCE is below target, look to see where the issues are eg. spring, summer, autumn, winter or across all seasons. Seek help from an adviser.

FCE is a key measure of feeding system efficiency on a dairy farm.

It should always be used in conjunction with:

- other measures of the farm's physical performance
- measures of the farm's financial performance such as annual operating profit and return on assets

