

# Feeding systems and measuring their performance

Dr. Steve Little, Grains2Milk program leader, Dairy Australia





**Operating profit**

**RoA and RoE**

**Wealth created**





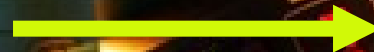
Operating income

Inputs

Operating costs



KPI's





## Feeding Systems Used by Aust. Dairy Farmers





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## **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**

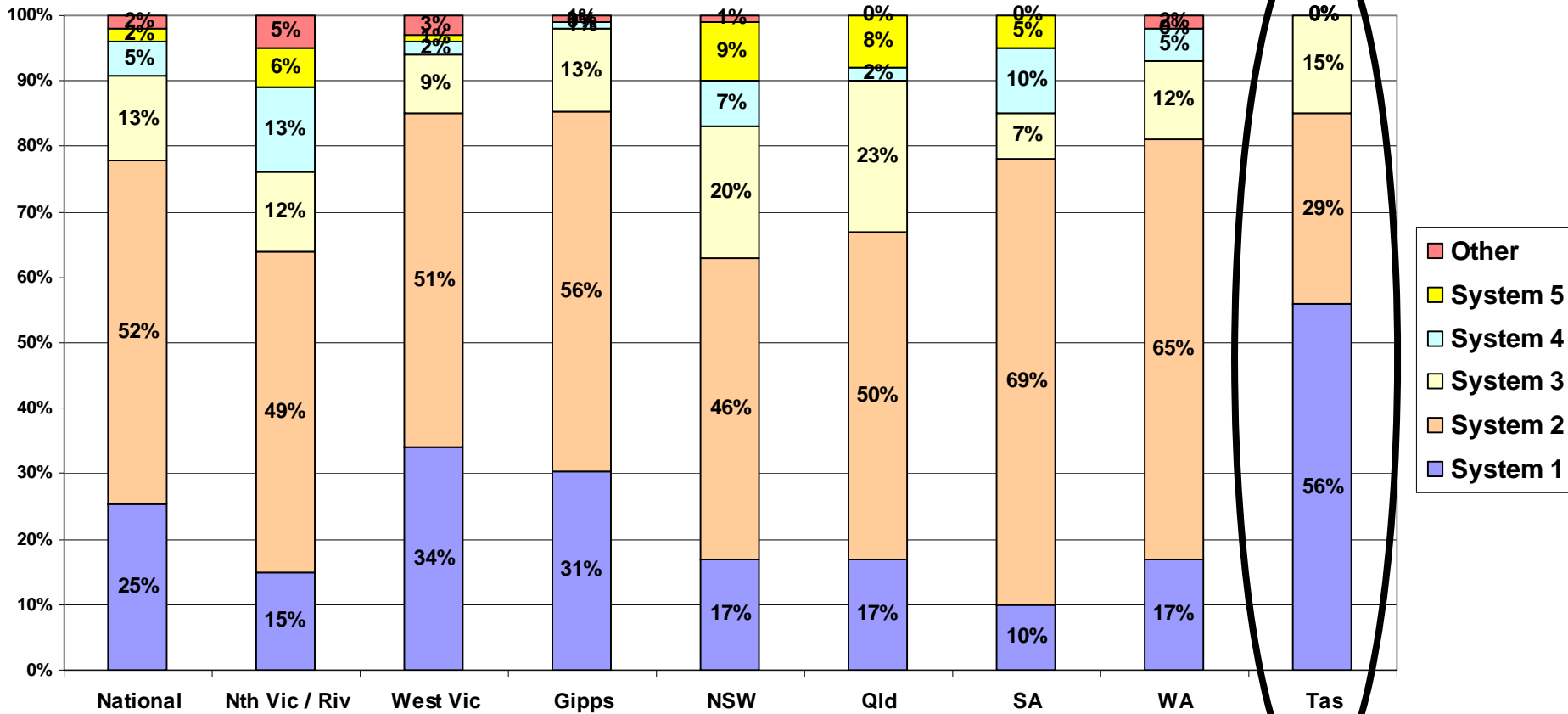
(Grazed pasture for < 9 mths per year + PMR on feed pad +/- grain / conc. in bail)

## **5. TMR system**

(Zero grazing. Cows housed and fed TMR)



# Feeding Systems Used on Aust. Dairy Farms

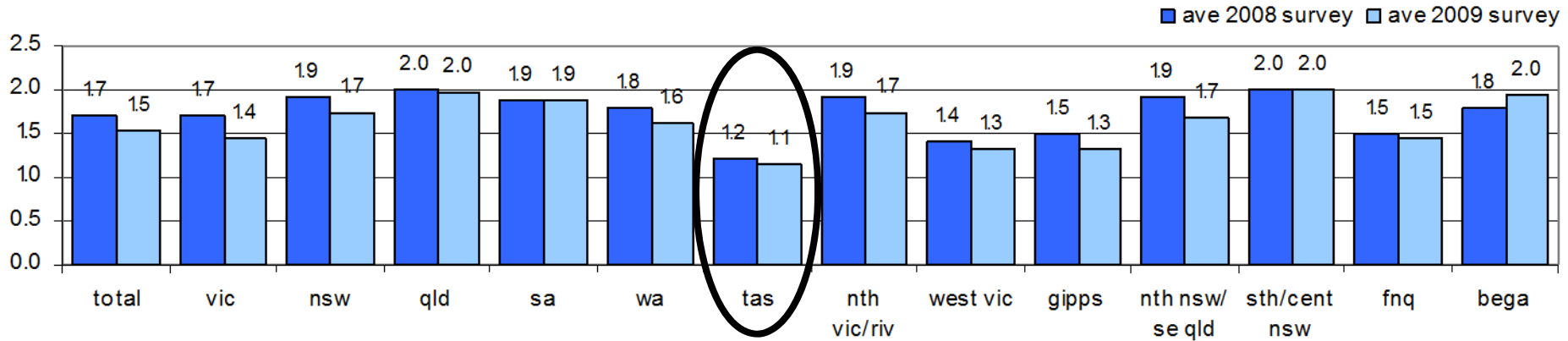


(Dairy Australia Nat. Dairy Farmer Survey, 2009)

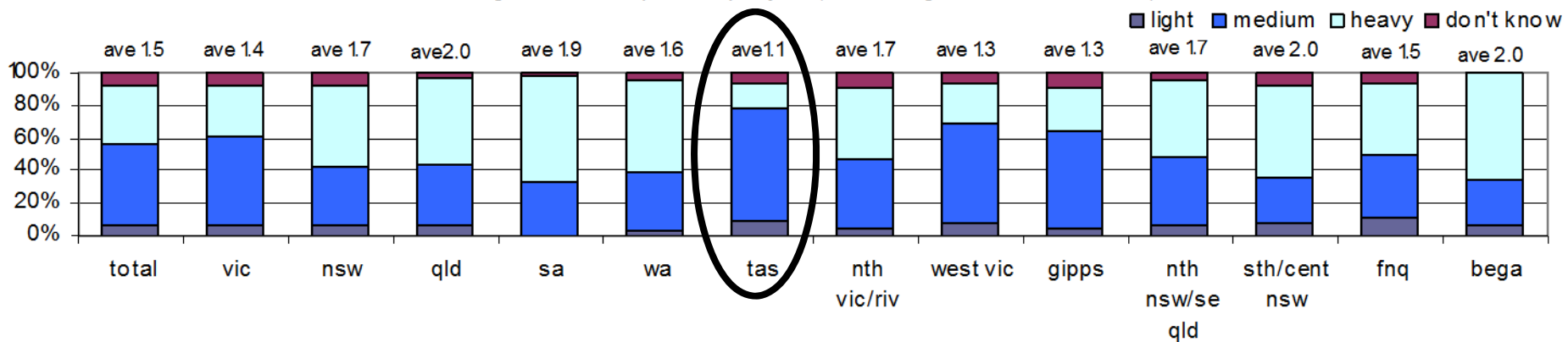


# Grain Feeding Rates in Tas. Dairy Herds

average tonnes fed per cow per year (base: fed grain or concentrates)



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(Dairy Australia Nat. Dairy Farmer Survey, 2009)



# Milk Income minus Total Feed Costs

**\$ price  
per unit Milk**



**\$ cost  
per unit Feed**





# Milk Income minus Total Feed Costs

**\$ price  
per unit Milk**



**Units of Milk  
produced per  
unit Feed**

**Feed Conversion**



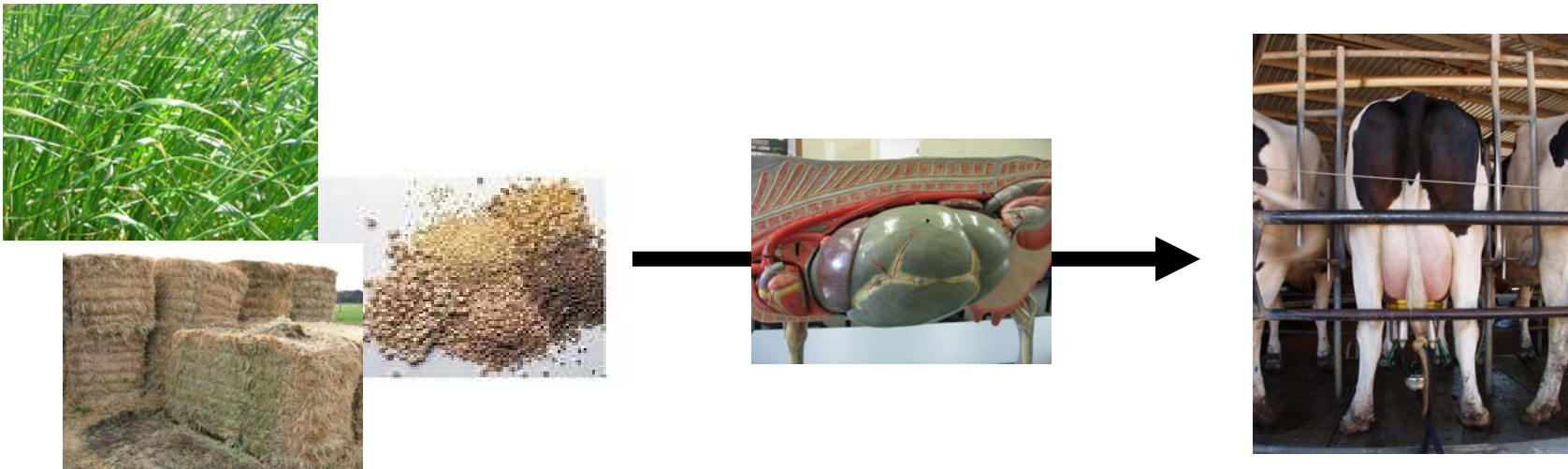
**\$ cost  
per unit Feed**





## Converting Feed into Milk

**How many grams MS are you getting from each kg feed DM?**

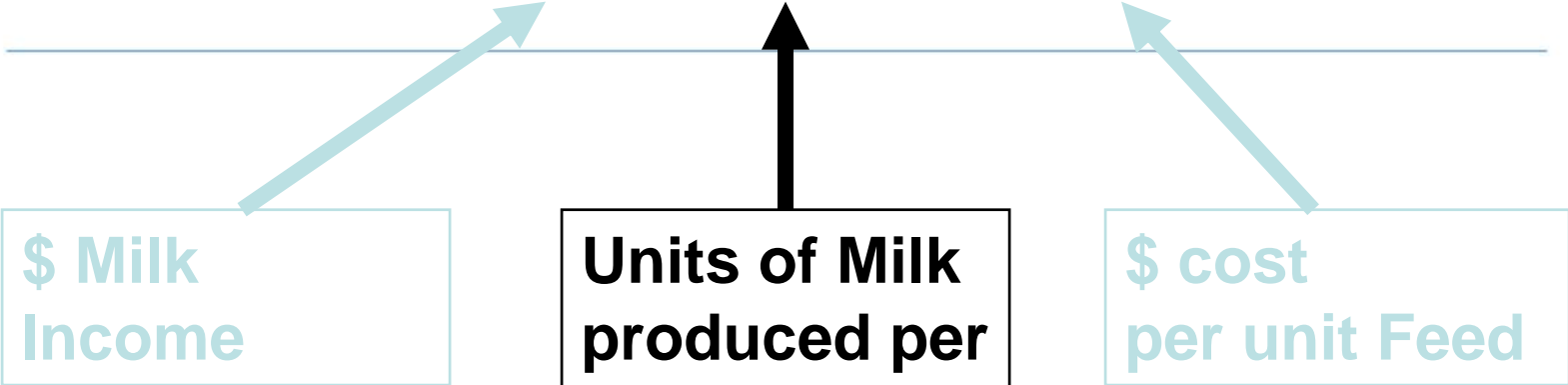


**Feed Conversion (FC) = g MS or kgs Milk per kg feed DM**

Can be measured many ways - over a cow's lifetime, over year, a season or every 7-10 days



# Milk Income minus Total Feed Costs



**Units of Milk produced per unit Feed**

**Feed Conversion**

**Feeding management**

- Feed gaps
- Ruminal acidosis
- Feed wastage

**Diet**

- Feed intake
- Feed quality
- Feed interactions

**Animal**

- Genetics
- Bodyweight change



# Feed Conversion in Your Feeding System

What should you be aiming for?

Annual Feed Conversion:

		grams MS / kg feed DM	
Feeding system		<b>^ Achievable target</b>	<b>*Take action if less than</b>
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 your herd's FC is less than this figure, further investigation is warranted.



# Feed Conversion in Your Feeding System

What should you be aiming for?

Annual Feed Conversion:





		kgs milk / kg feed DM	
Feeding system		<b>^ Achievable target</b>	<b>* Take action if less than</b>
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 your herd's FC is less than this figure, further investigation is warranted.



# Feed-out methods

			% feed wasted	Capital cost / cow
Temporary, relocatable			30+%	<\$50
Semi-permanent			15-30%	\$50-100
Permanent, basic, functional			8-15%	\$100-200
Permanent, max. control			5-8%	\$200+



## Plan with growth in mind

### Example farm: Initial feed-out facility



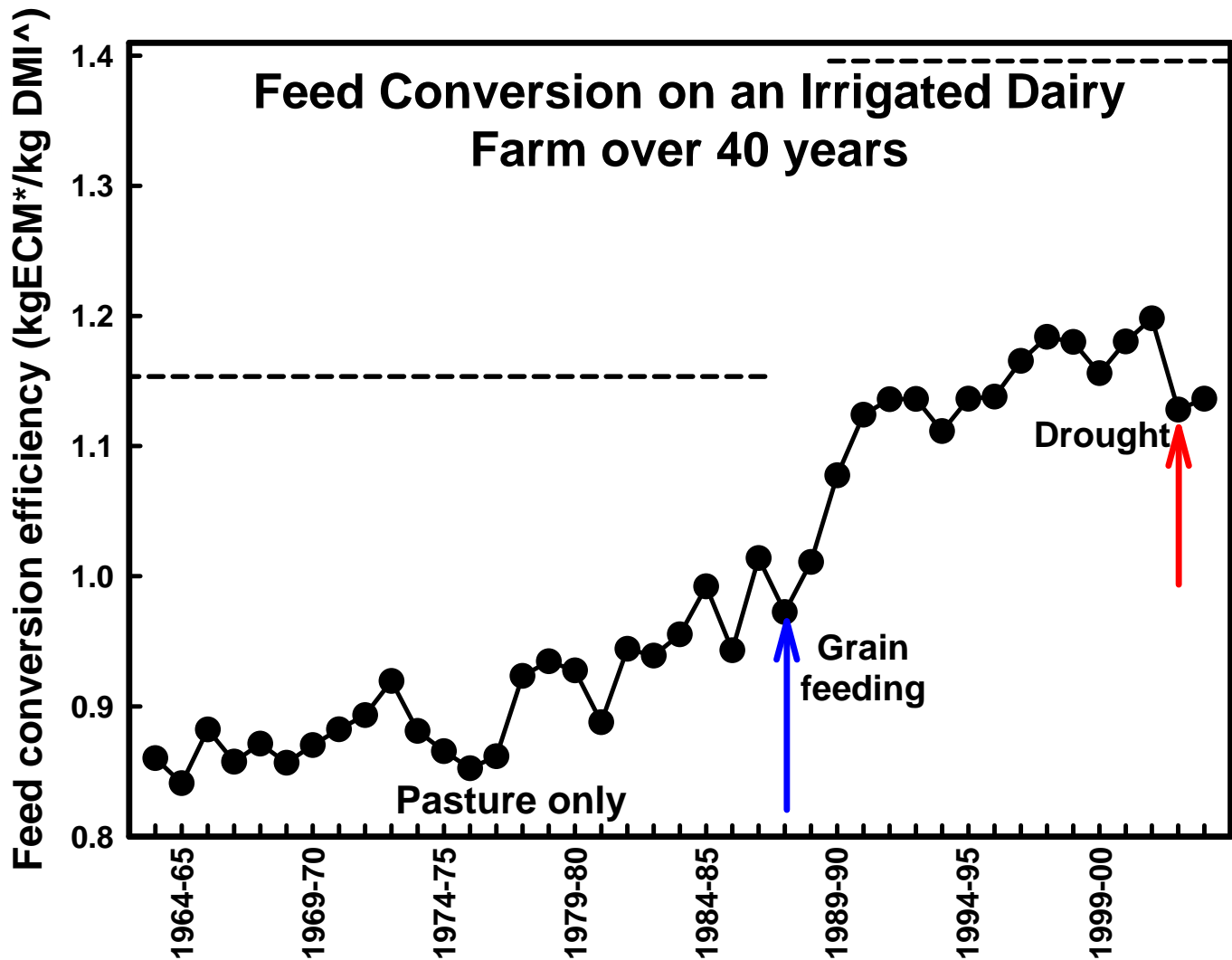


## Plan with growth in mind

**Same farm: Four years later**



# When changing feeding system, expect a lag phase

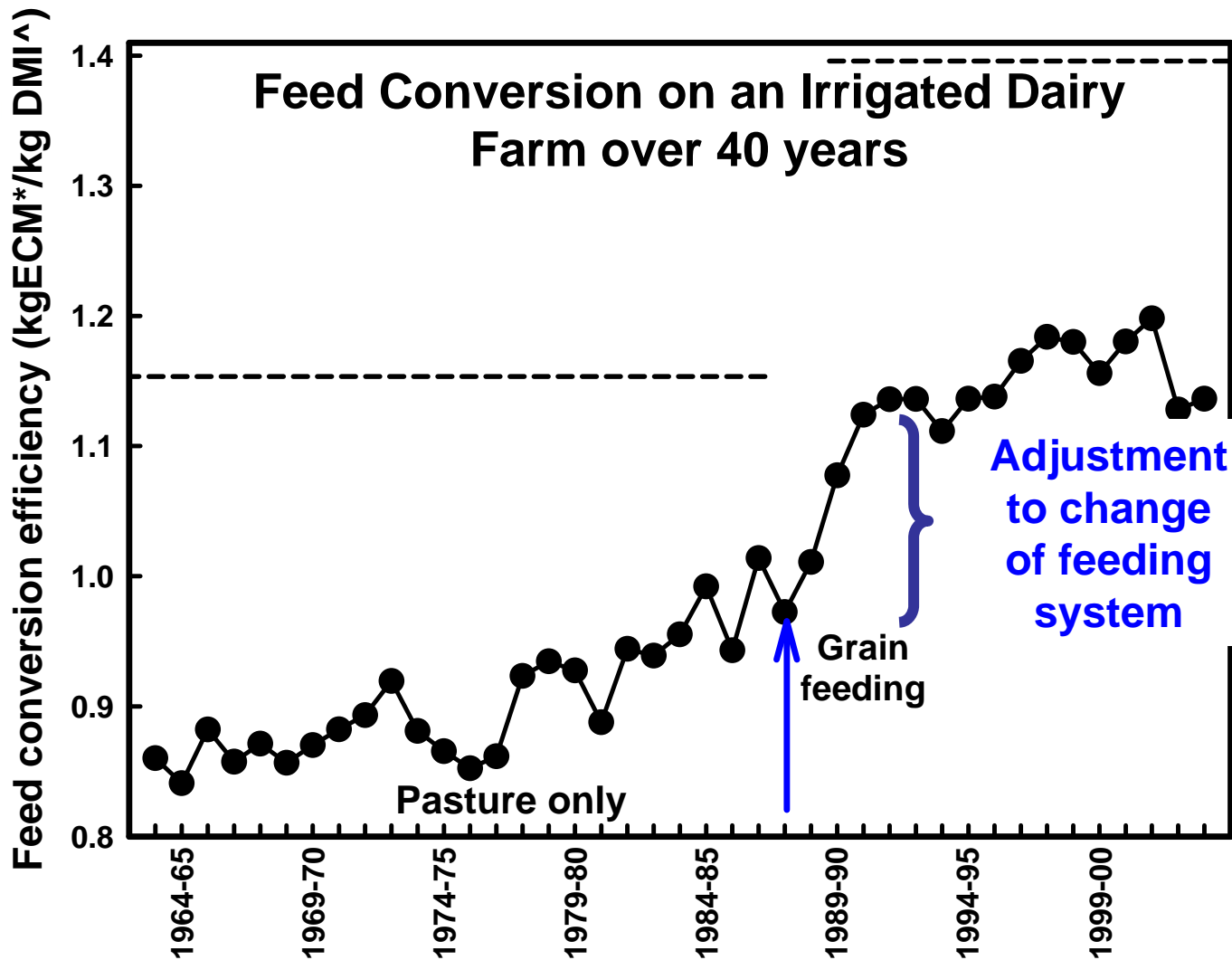


\* ECM - Energy Corrected Milk

<sup>^</sup> DMI - Annual Dry Matter Intake for milking herd including non-lactating period

(Ho & Wales, Unpublished)

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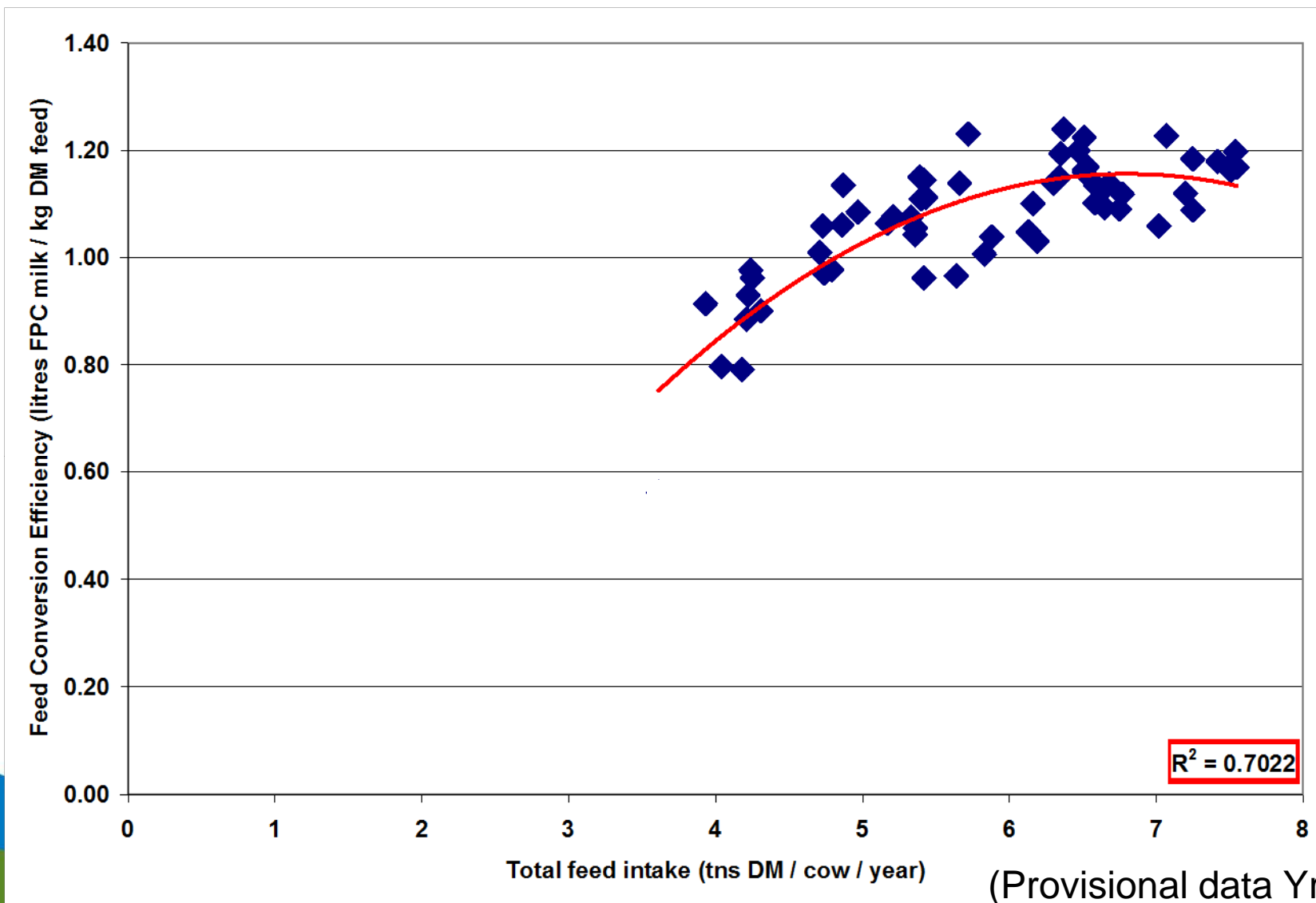
## TasMilk-60 project

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- **Collecting technical and financial performance data for 60 dairy farms spanning a range of production systems and feed input levels over 2 years (0607 & 0708)**
- **This data is being used to help develop robust technical and financial performance measures for Australian dairy feeding systems**



# Total feed intake vs Feed Conversion

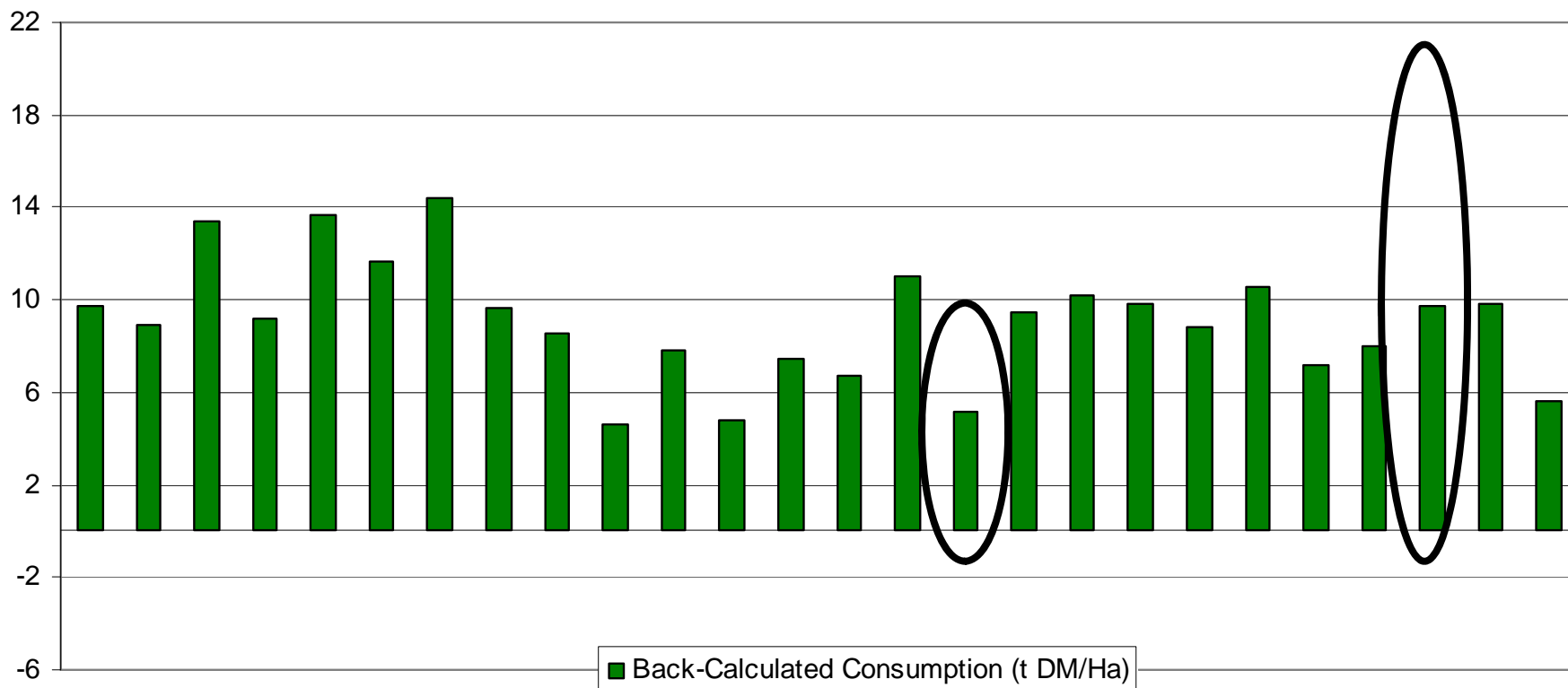


(Provisional data Yr 0607)



# Pasture growth and consumption

Pasture Growth & Consumption Gaps

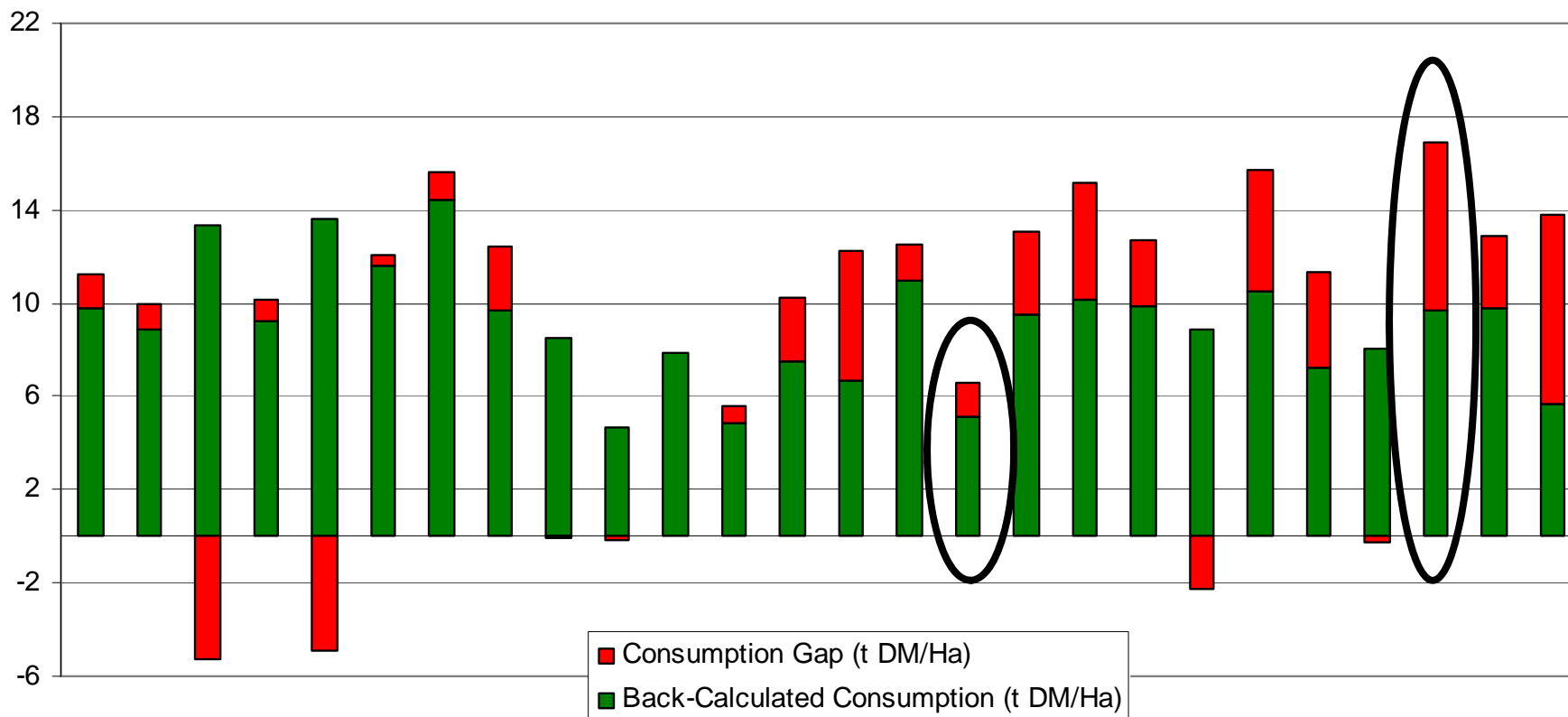


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# Pasture growth and consumption

Pasture Growth & Consumption Gaps

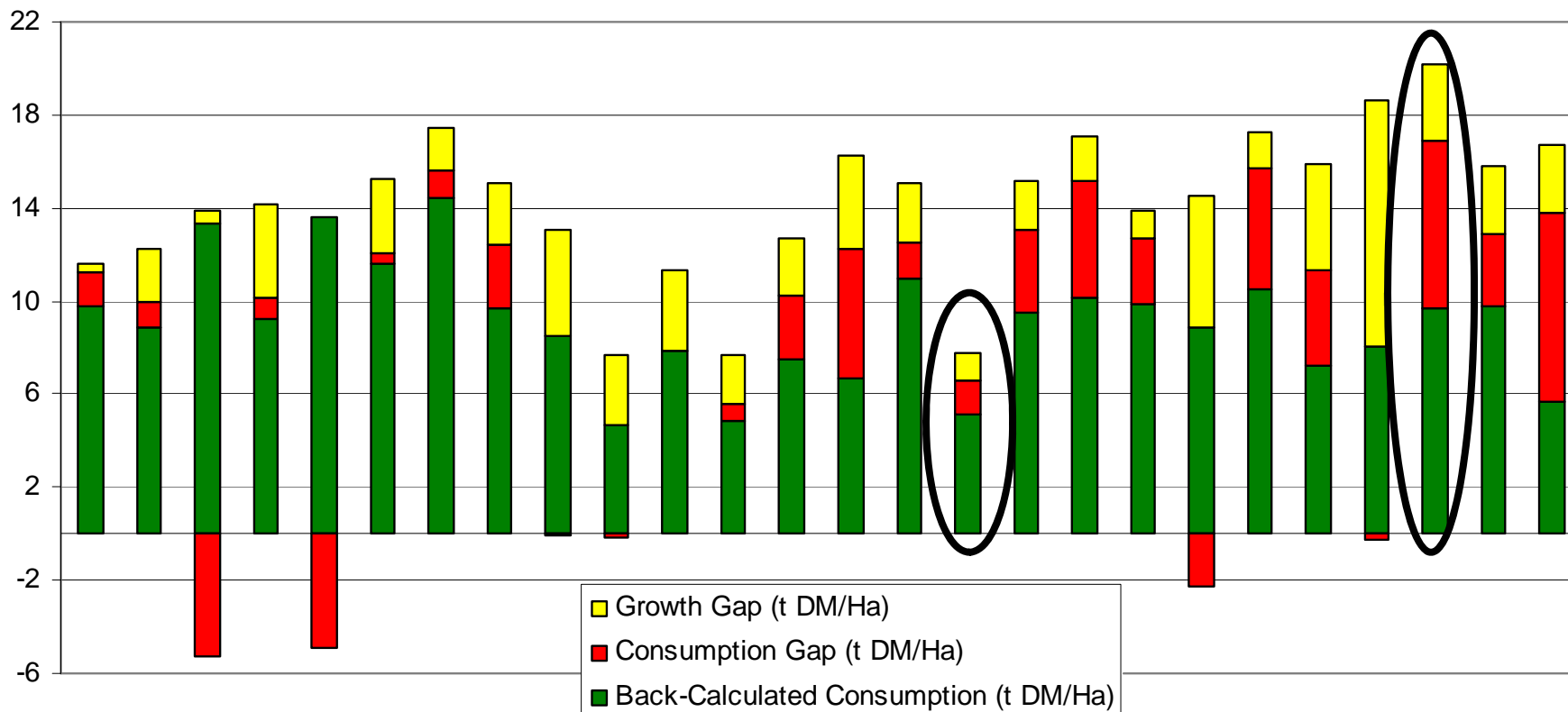


(Provisional data Yr 0607)



# Pasture growth and consumption

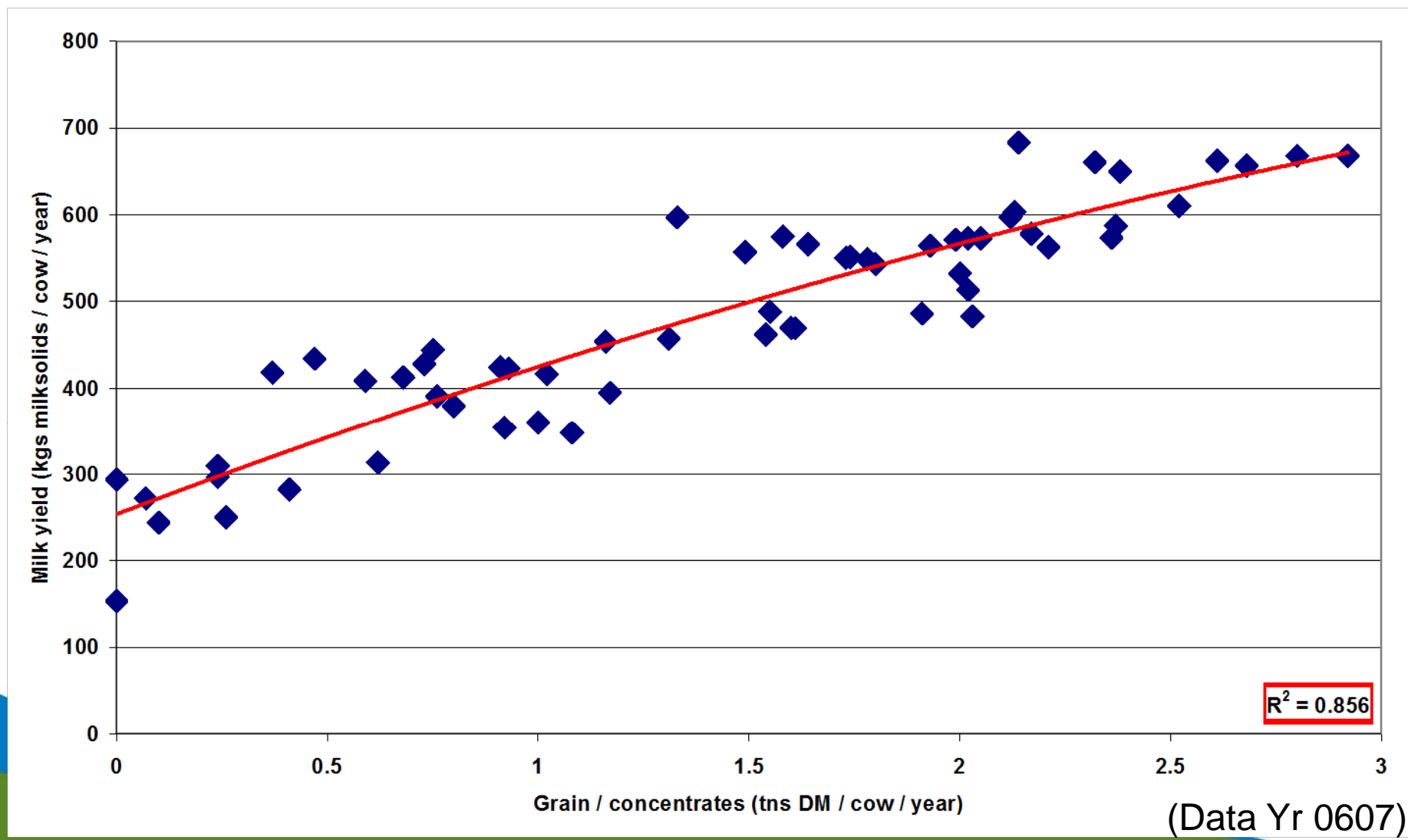
Pasture Growth & Consumption Gaps



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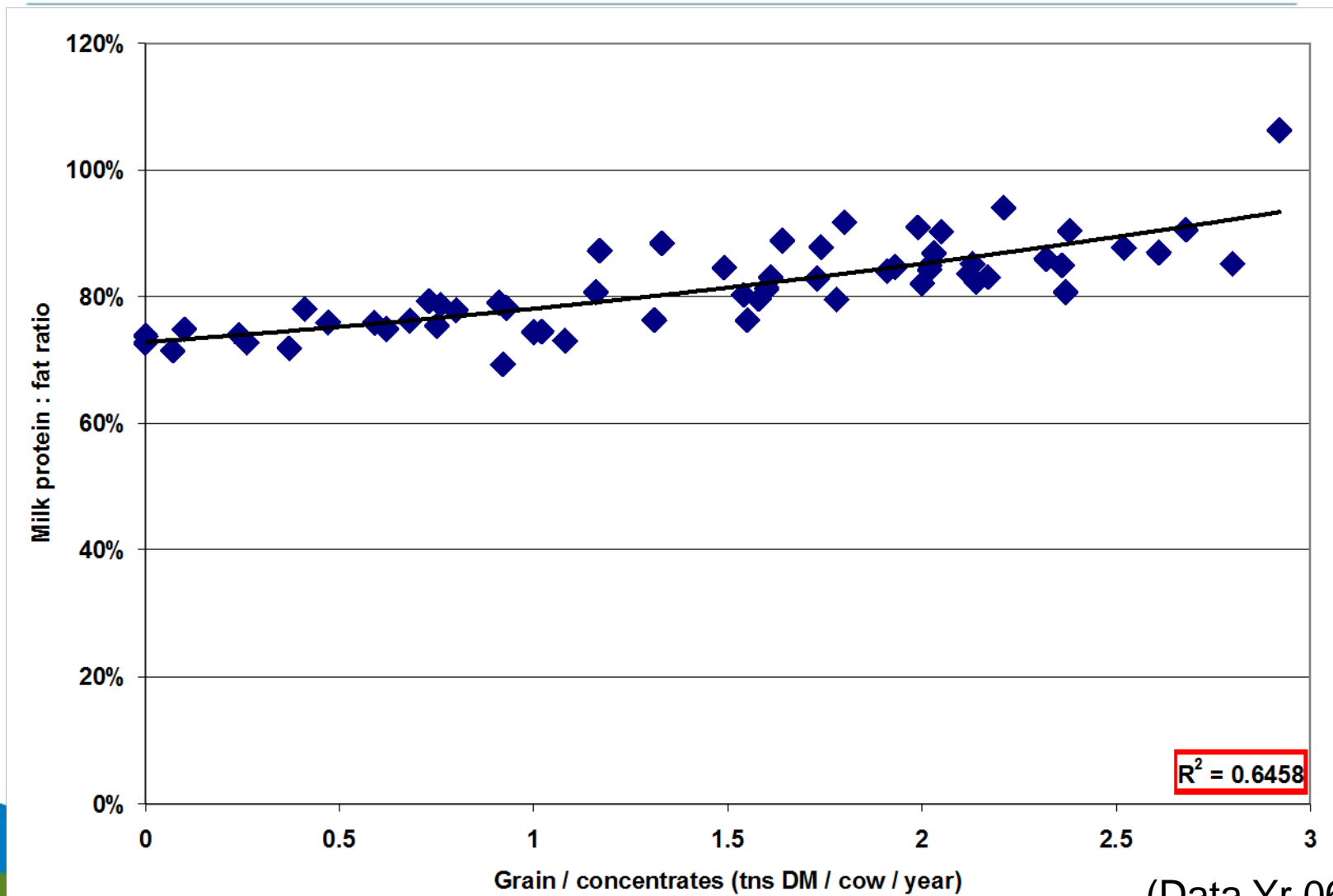


# Grain feeding rate vs Milk yield





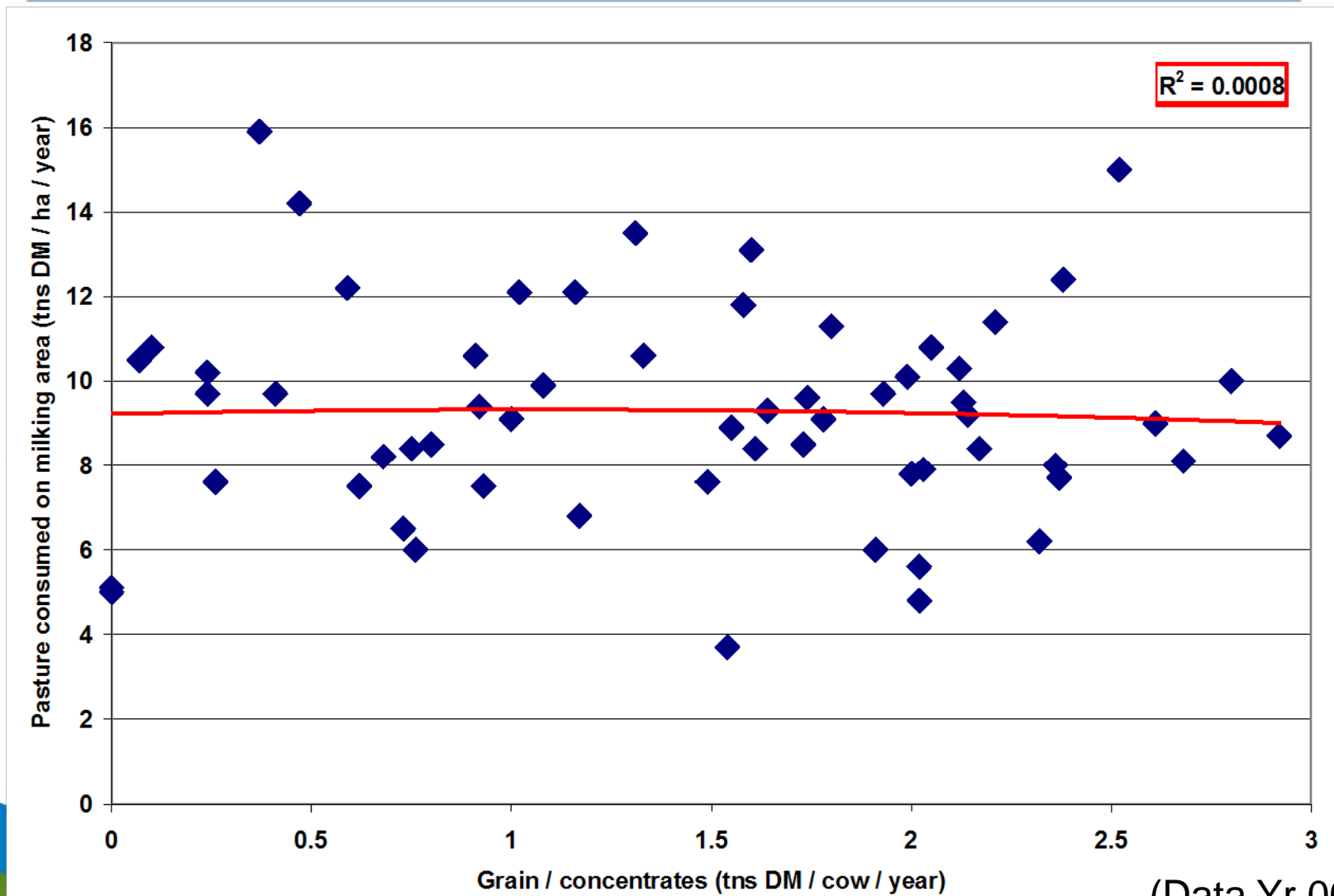
# Grain feeding rate vs Milk composition



(Data Yr 0607)



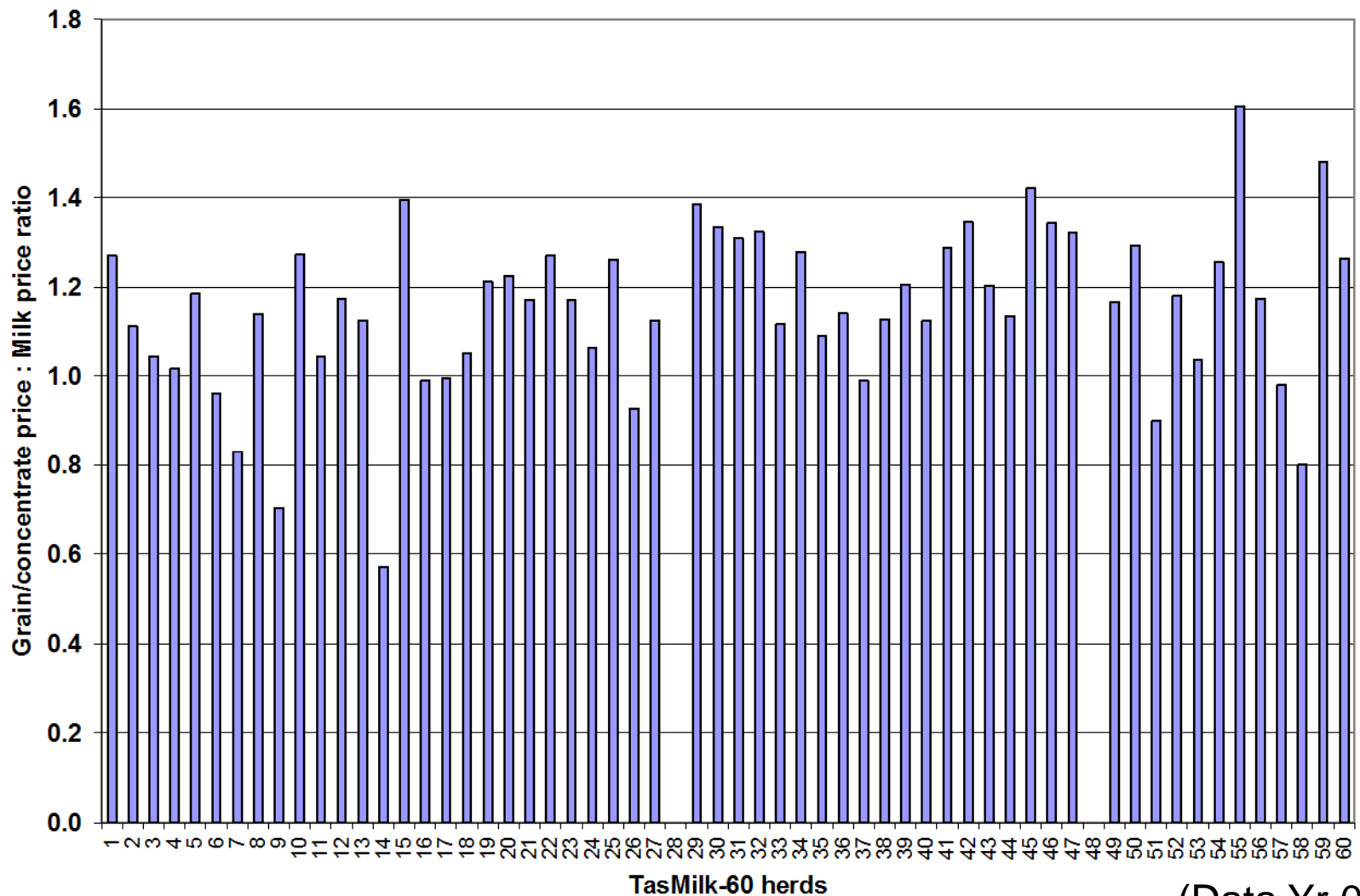
# Grain feeding rate vs Pasture utilisation



(Data Yr 0607)

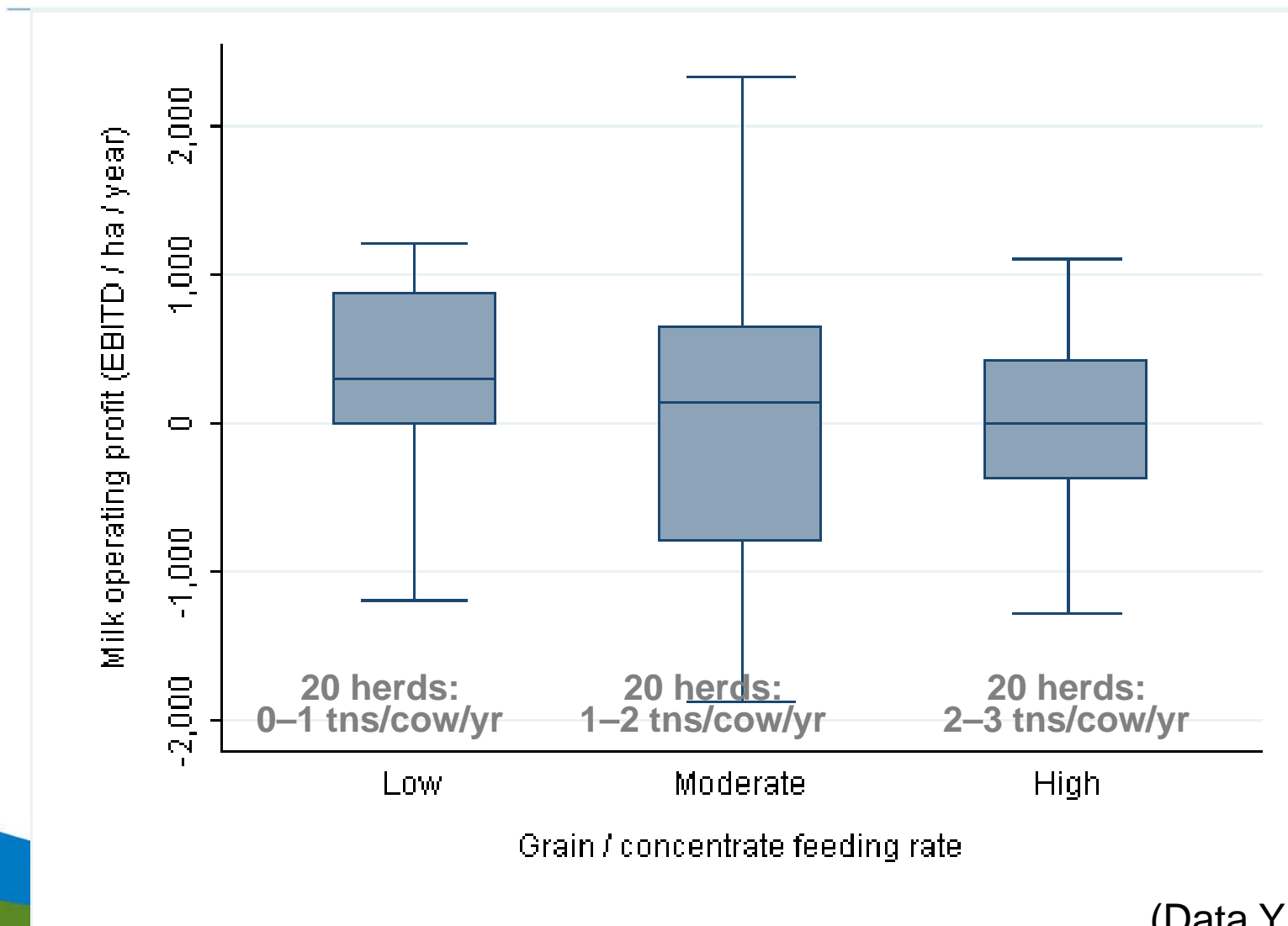


# Grain/conc. price : Milk price ratio





## Grain feeding rate vs Profit







**Thank You**

**Any Questions?**