

Beef economics = Heifer management

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Fred Morley Unit
Charles Sturt University

Cattle breeding?

Beef production?

Production

Genetics

Management



Fred Morley Unit

Production - Genetics - Management

***“What shall we do,
what shall we do!”.***

“Escaping goblins to be caught by wolves”

J.R.R.Tolkien, *The Hobbit*.

Relative influence on \$ income

Stocking rate 8

Fertility 4

Growth rate 2

Carcass 1

Relative influence on \$ income

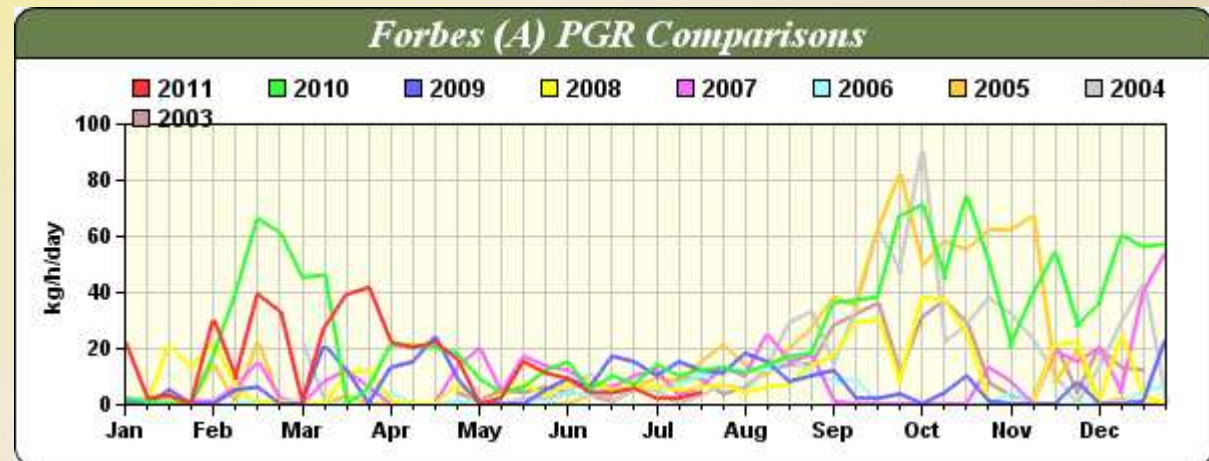
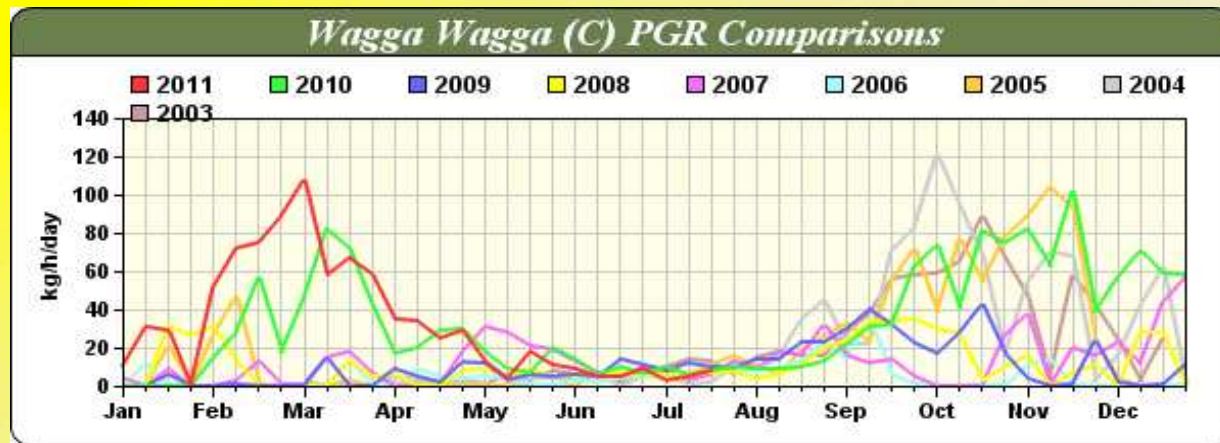
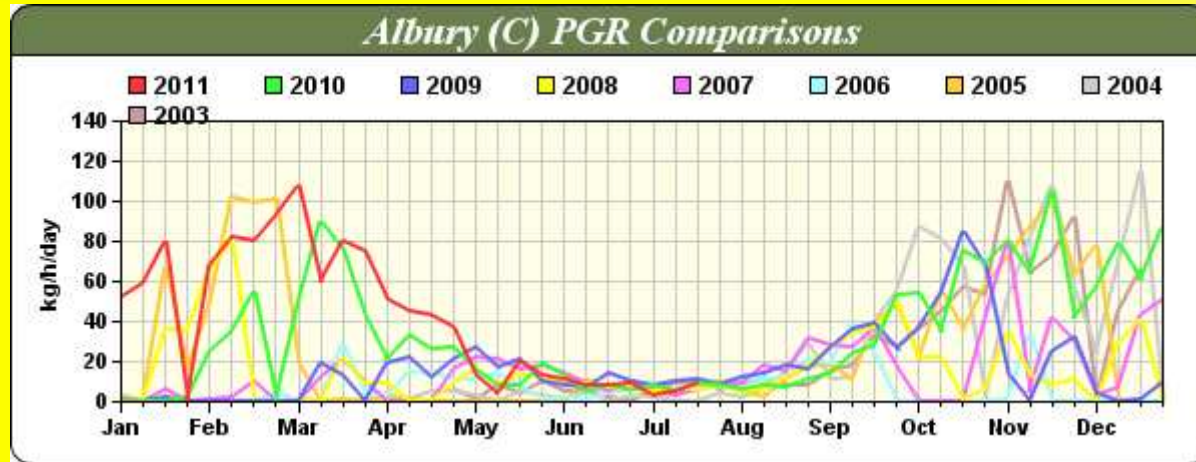
Stocking rate **8**

Fertility 4

Growth rate **2**

Carcass 1

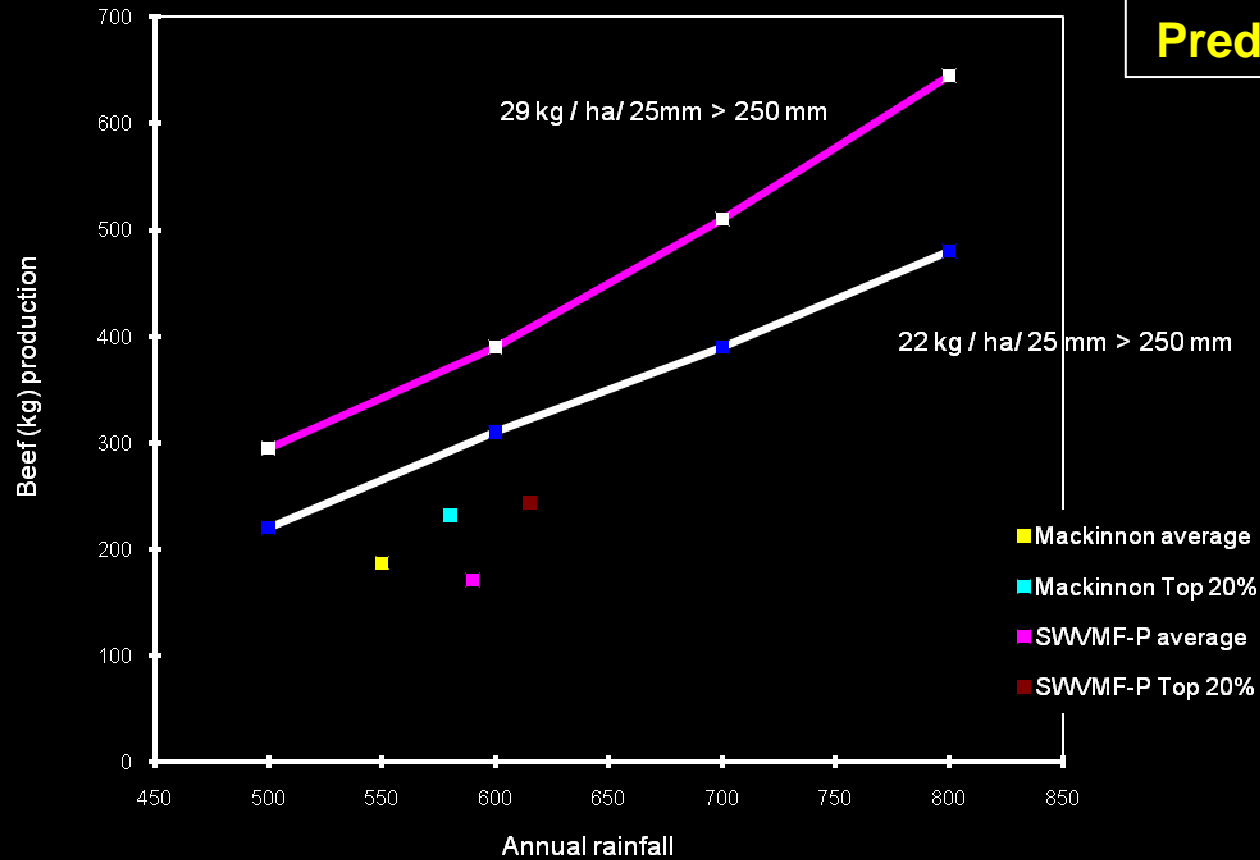
CSIRO Pastures from Space



Shire:
Pasture Growth Rates

Annual Beef Production (kg) related to rainfall
in a self replacing herd

**Benchmarking:
Predictions v actuals**





The loner



Targeted 'set-stocking'



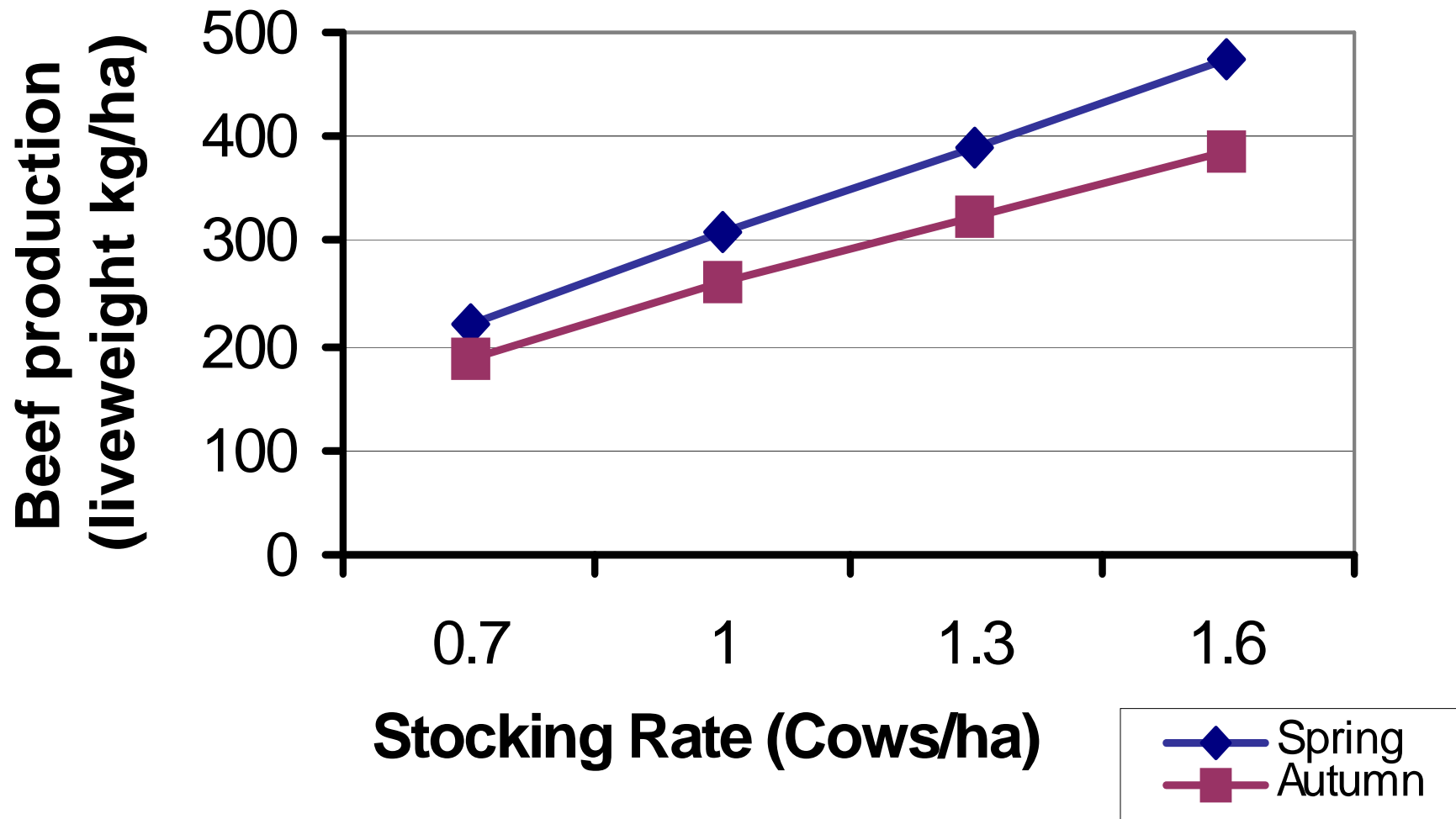
Timed grazing



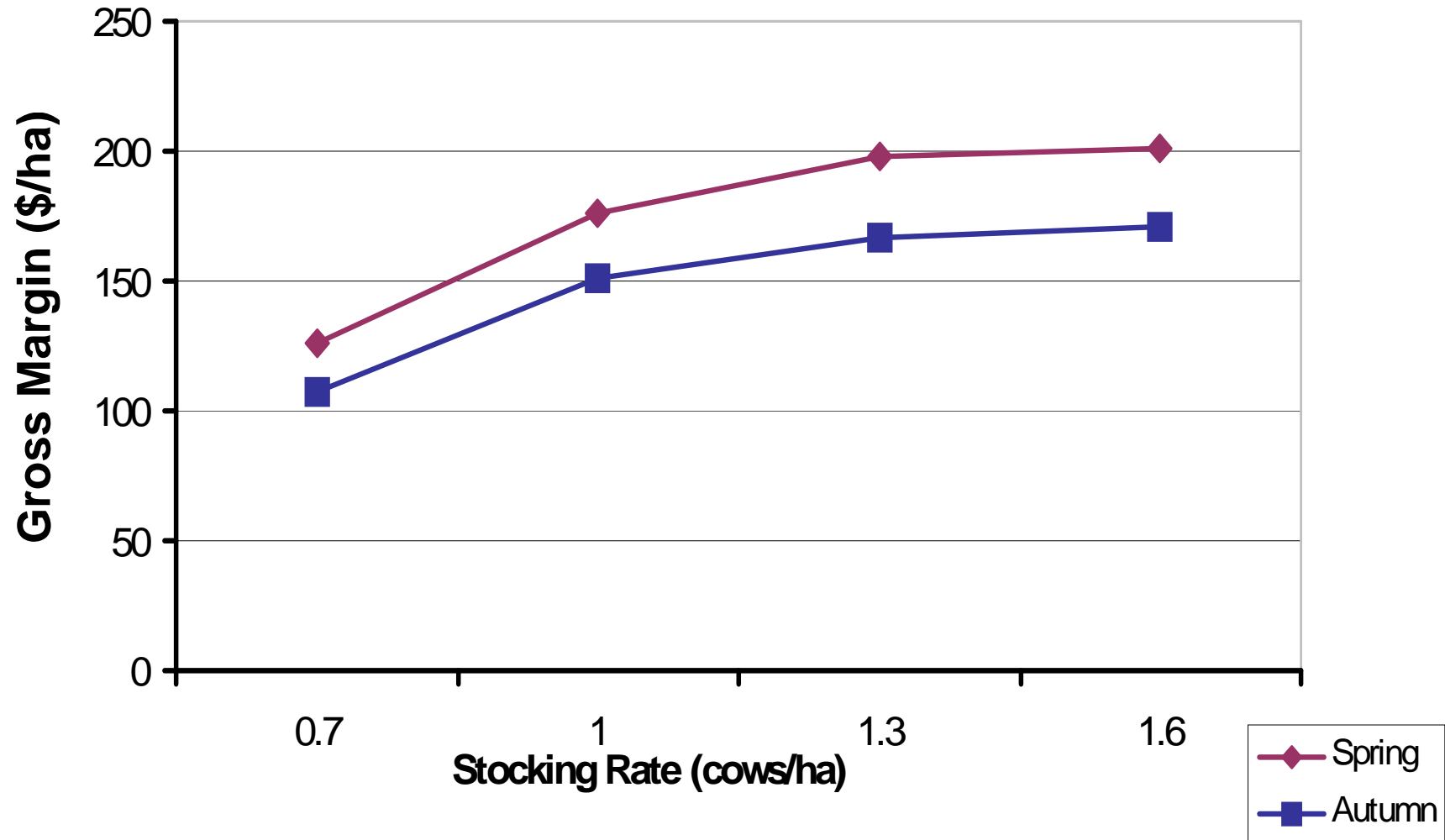
4 paddock rotation (lucerne)

Different grazing systems

Beef Production per Hectare

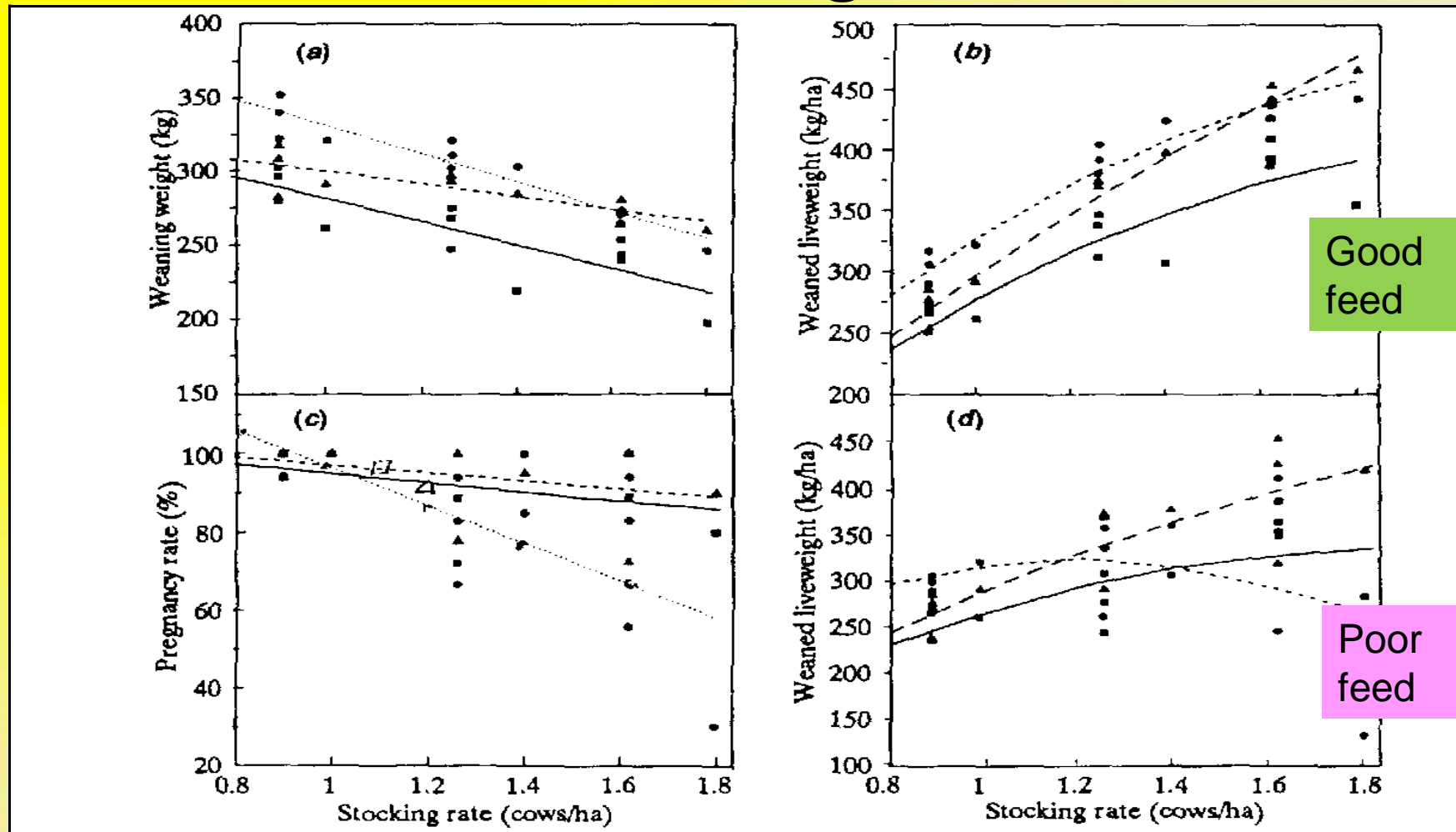


Spring Vs Autumn Calving Gross Margin (\$/ha)



Diana Perry 2006

The relationship between productivity and stocking rate



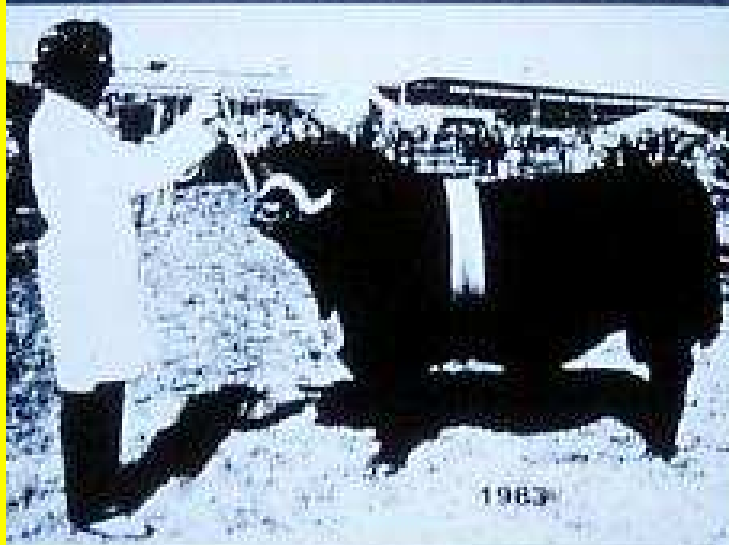
Relative influence on \$ income

Stocking rate 8

Fertility 4

Growth rate 2

Carcass 1



Royal
Melbourne
Show



Managing groups → meat quality

during backgrounding: ↑↑ yield & ↑tender

during finishing: ↑ small gains

- “poor doers”

less palatable than faster growing animals



Relative influence on \$ income

Stocking rate 8

Fertility 4

Growth rate 2

Carcass 1

***“When you come to a fork in the road-
take it!”***

Yogi Berra (cited by, Goglany, IM, 2001)

Beef cattle production & profits

Genetics

Reproduction



Stocking rate 8

Fertility 4

Growth rate 2

Carcass 1

take it !

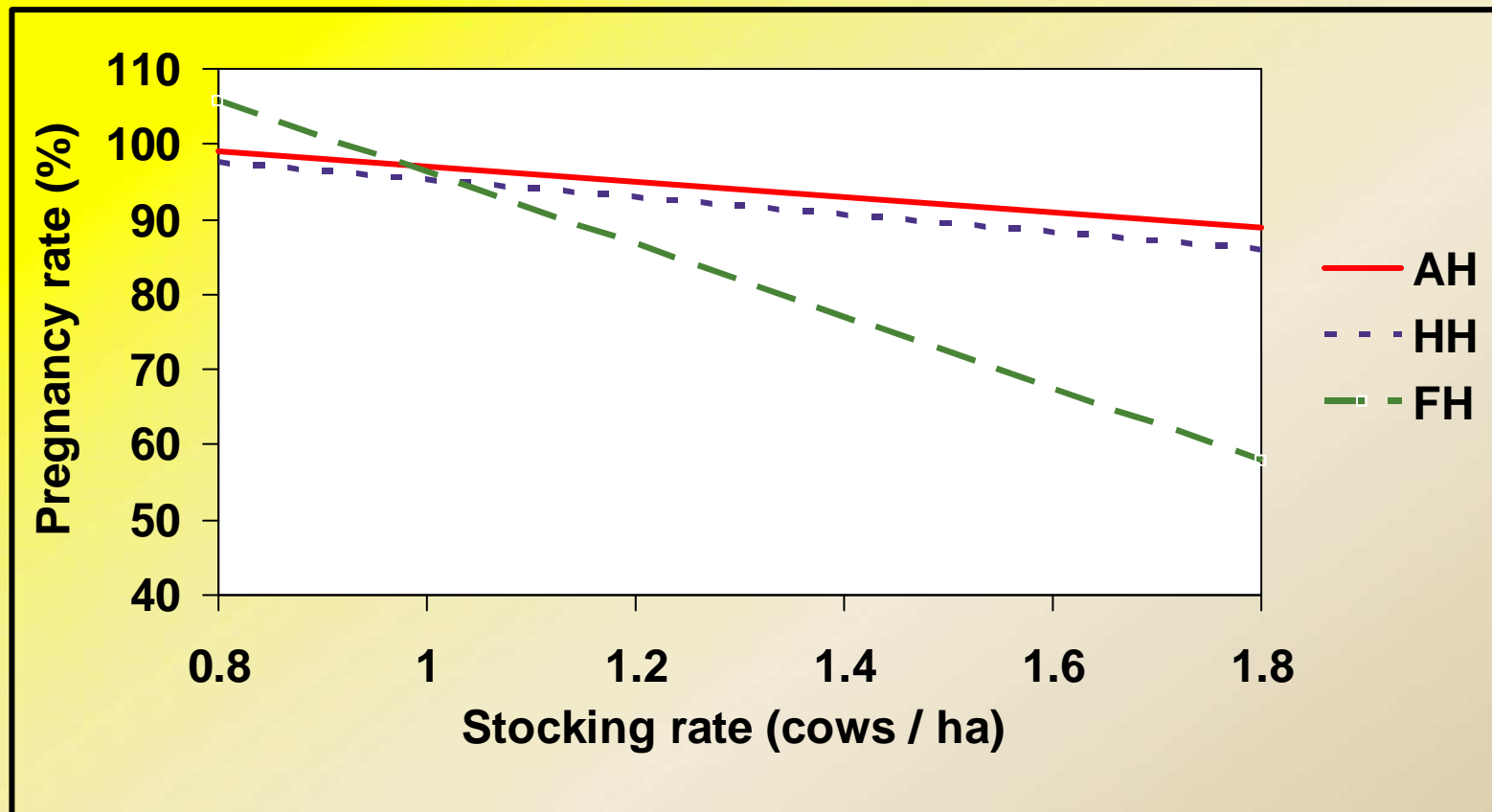
Fertility:

Better defined as:

Heifer management

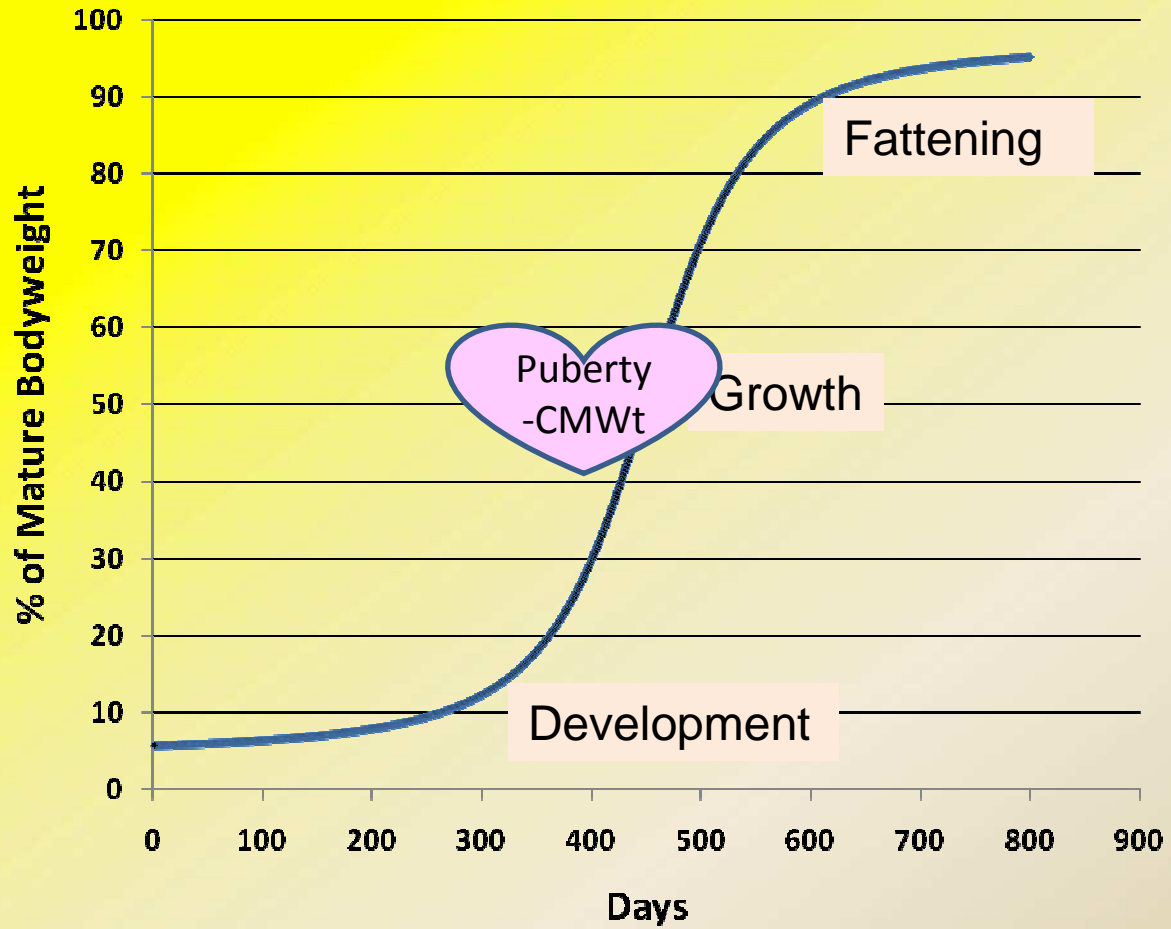
→ Drives beef production

↗ Stocking rate → ↘ Pregnancy rate



Is this a problem ??

Growth Curve - beef



Heifer retention: 70%

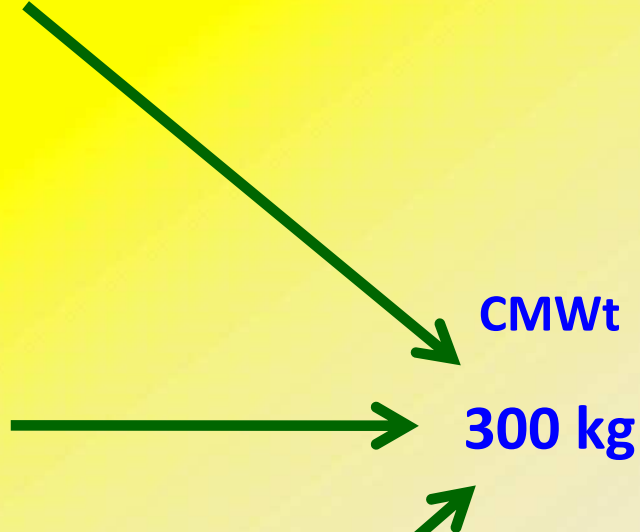
Too high ??

Why?

How?

- **Critical Mating Weight (CMWt)**
- **Join at 14 mths to calve at 2 yo**

Wean
BWT
300
295
290
285
280
275
270
265
260
255
250
240
235
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155
150
145



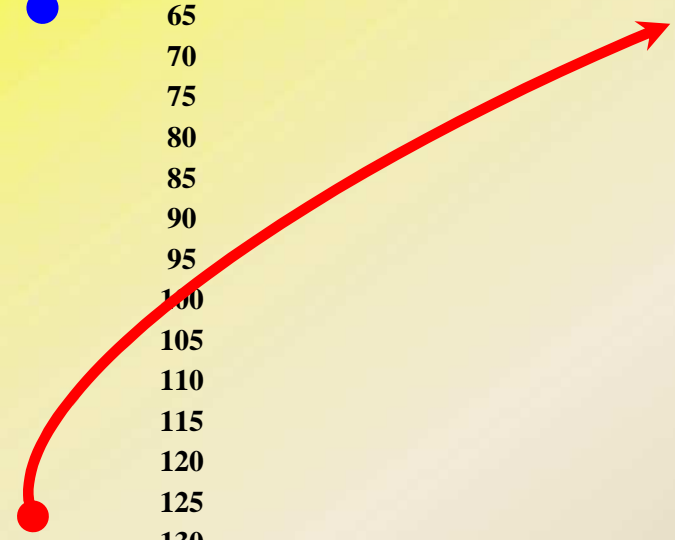
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215
210
205
200
195
190
185
180
175
170
165
160
155
150
145



CMWt
300 kg

Wean BWT	Required LWT gain
300	0
295	5
290	10
285	15
280	20
275	25
270	30
265	35
260	40
255	45
250	50
245	55
240	60
235	65
230	70
225	75
220	80
215	85
210	90
205	95
200	100
195	105
190	110
185	115
180	120
175	125
170	130
165	135
160	140
155	145
150	150
145	155



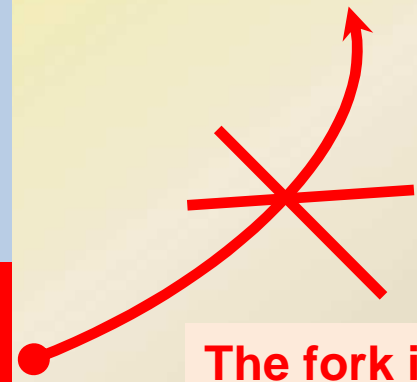
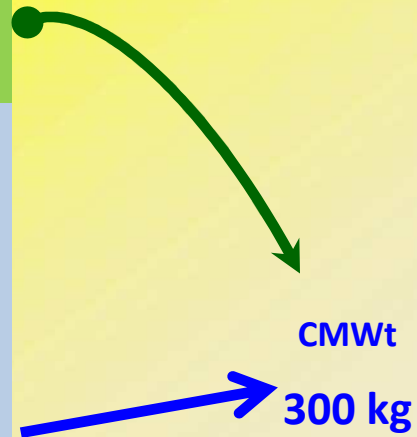
CMWt
300 kg

Wean BWT	Required LWT gain	210 Days to join Kg/d	
300	0	0.000	
295	5	0.024	
290	10	0.048	
285	15	0.071	
280	20	0.095	
275	25	0.119	
270	30	0.143	
265	35	0.167	
260	40	0.190	
255	45	0.214	
250	50	0.238	
245	55	0.262	
240	60	0.286	
235	65	0.310	
230	70	0.333	
225	75	0.357	
220	80	0.381	
215	85	0.405	
210	90	0.429	
205	95	0.452	
200	100	0.476	
195	105	0.500	
190	110	0.524	
185	115	0.548	
180	120	0.571	
175	125	0.595	
170	130	0.619	
165	135	0.643	
160	140	0.667	
155	145	0.690	
150	150	0.714	
145	155	0.738	

			CMWt
			300 kg

Supplement

Wean BWT	Required LWT gain	210 Days to join Kg/day
300	0	0.000
295	5	0.024
290	10	0.048
285	15	0.071
280	20	0.095
275	25	0.119
270	30	0.143
265	35	0.167
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The fork in the road:
➔ to market

Why high heifer retention

Value add to females: PTIC/ Non-PTIC

Young herd: all cows < 8 ½ yo

All breeders pregnant

Reduce grass tetany / milk fever

Length of Joining

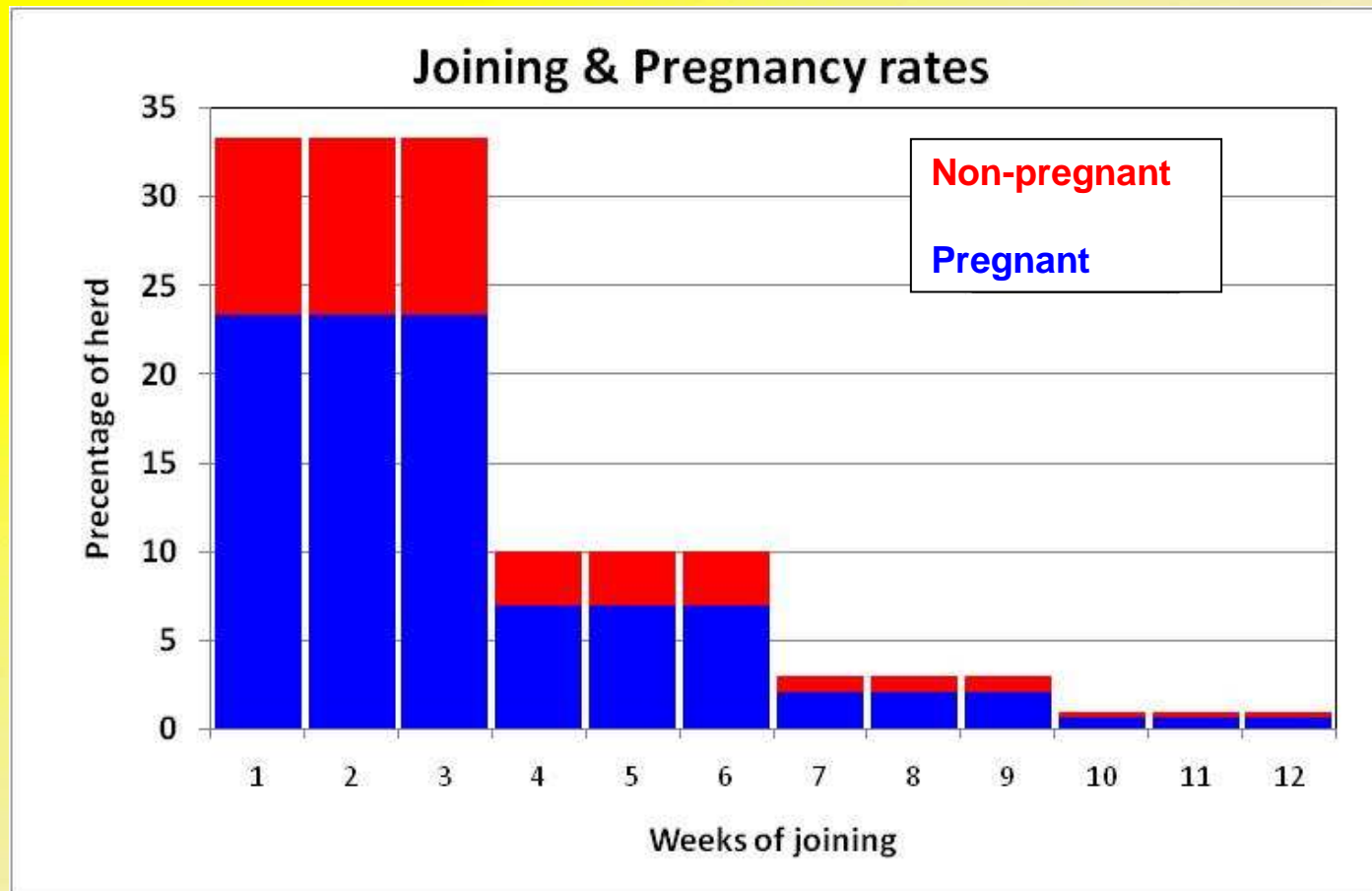
2 oestrous cycles

6 weeks

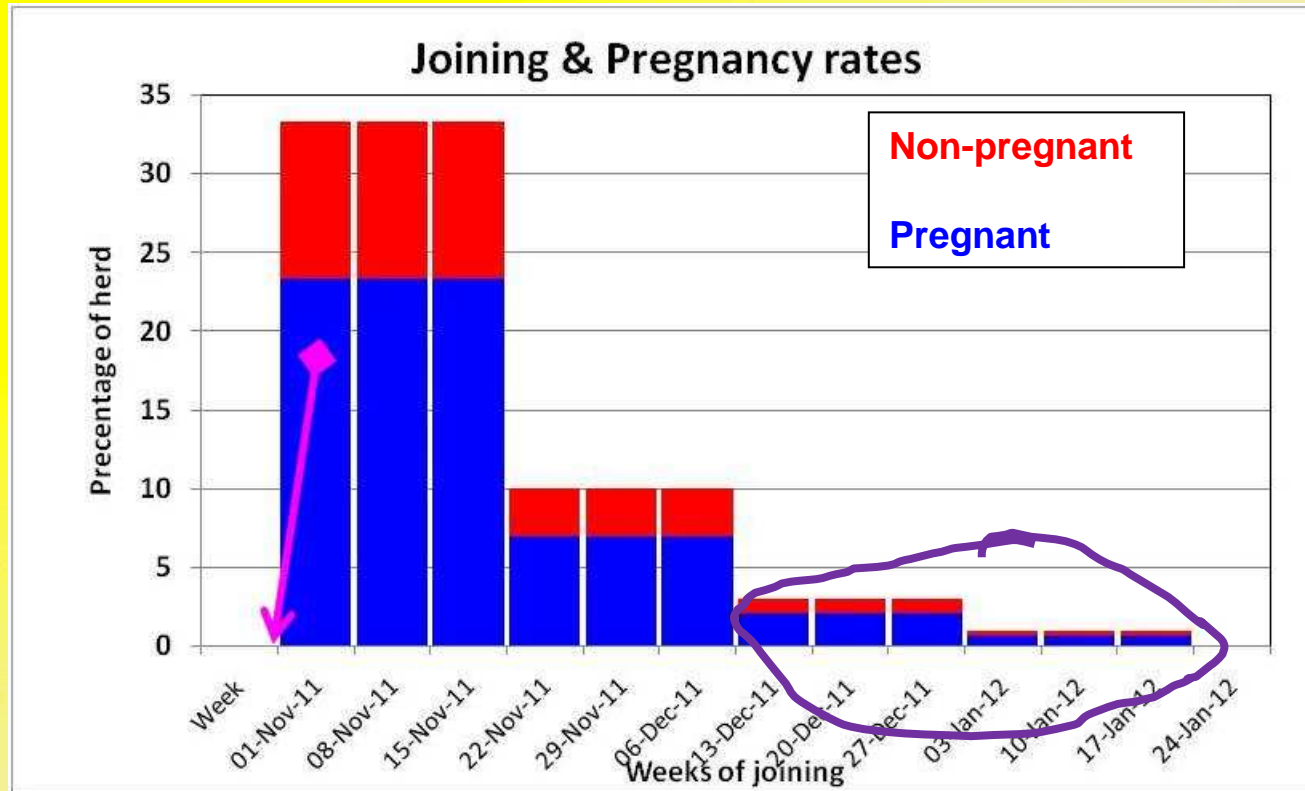
Pregnancy diagnosis

Retain only pregnant females (100% PTIC)

Length of joining: 12 weeks



Length of joining: 2 oestrous cycles



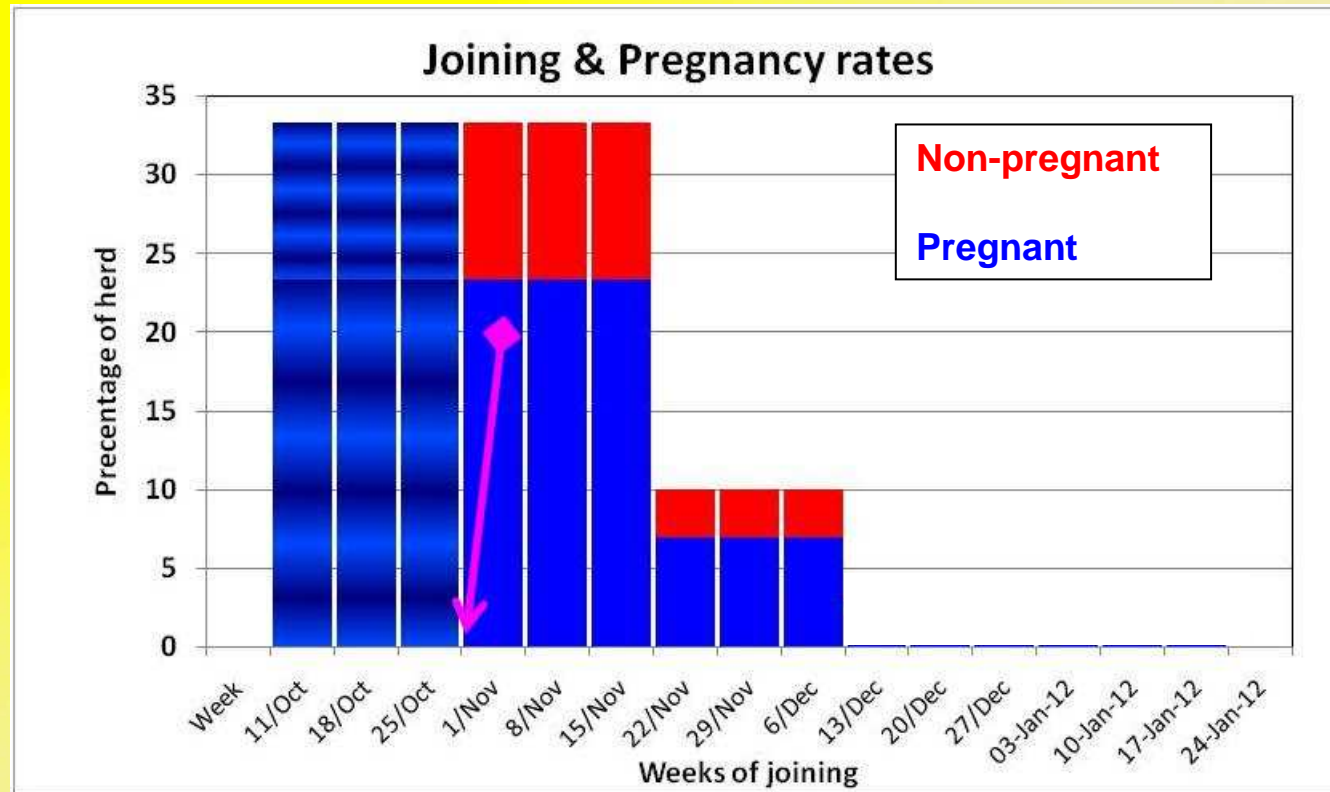
6 weeks less to monitor calving

6 weeks longer to get back in calf

No 'age' runts

Net income ↗ ~ 10%

Length of joining: 2 oestrous cycles



Days to return to service: real or a furphy ?

Dystocia

Can we avoid dystocia?

Feed our heifers ✓ ✓ ✓

Bull selection

Feed our heifers ✓ ✓ ✓

Manage Calcium intake & Metabolism, clover

Feed our heifers ✓ ✓ ✓

Nutrition / growth of heifers

1980 – 1982 Struan, S.A.

3 Nutrition levels: **High Medium Low**

2 age ranges: **2-8 months - 8-14 months**

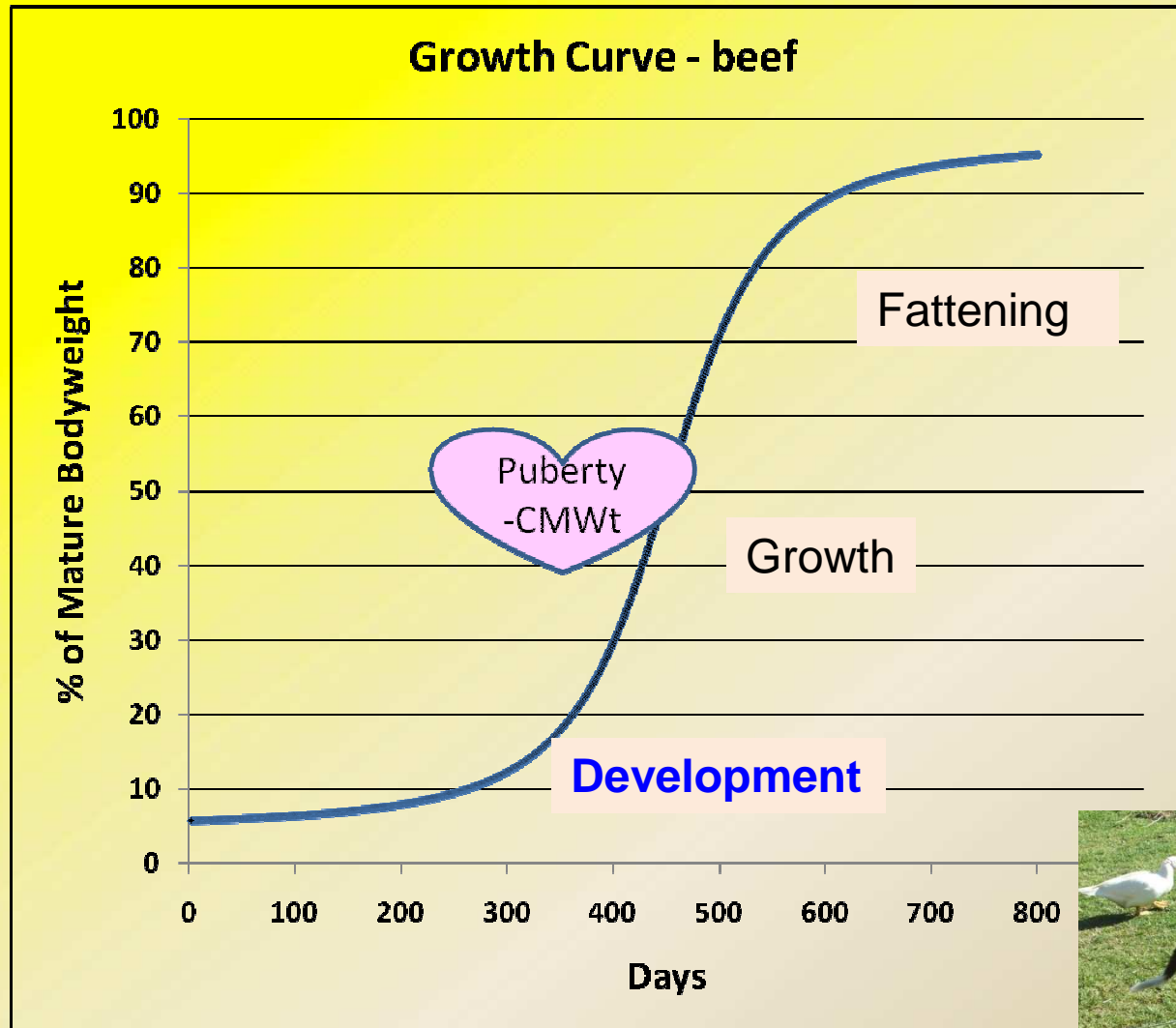
→ 5 combinations

Feed our heifers ✓ ✓ ✓

Johnsson, Obst & others

Australian Society Animal Production. #13

Feed heifers: when ???

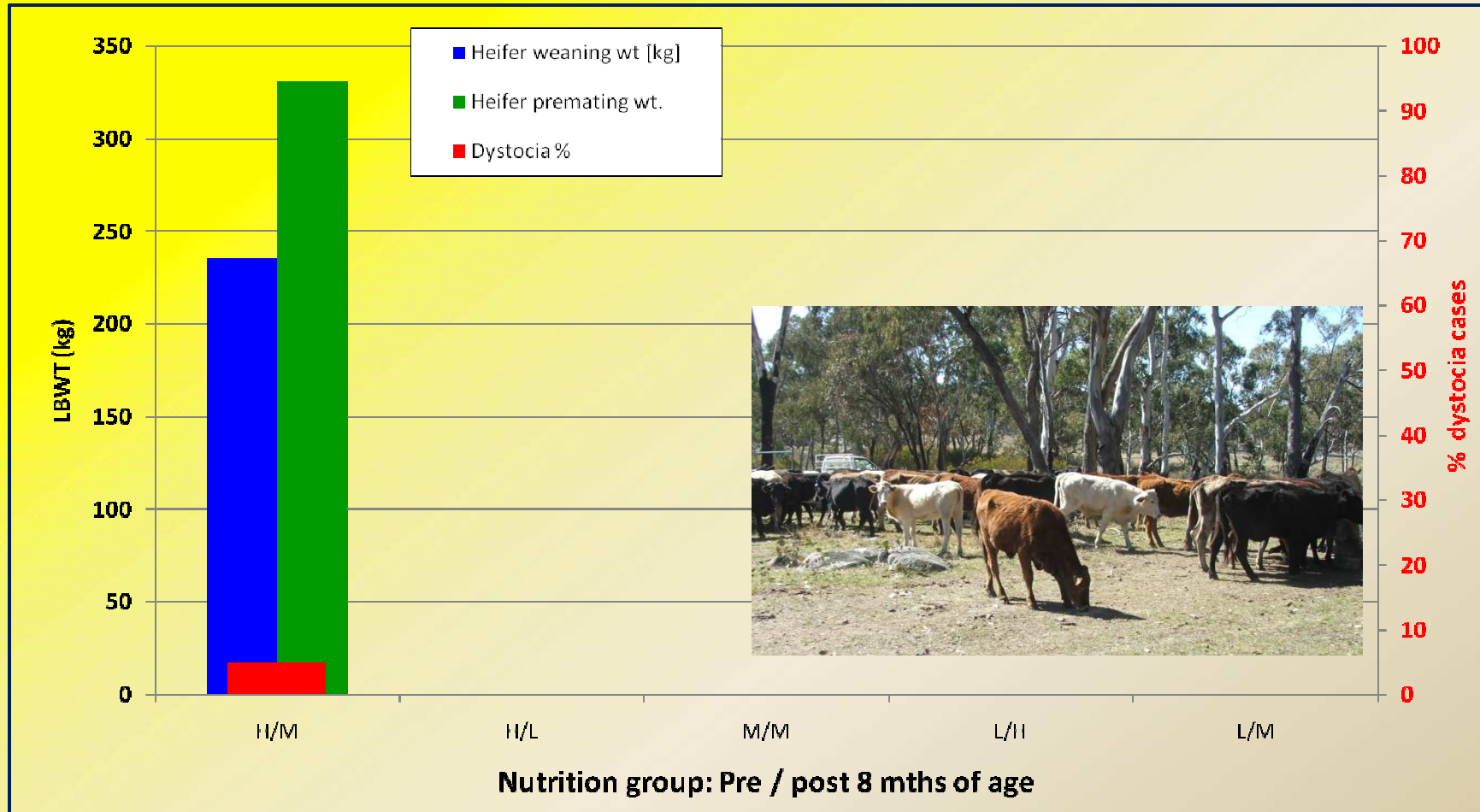


Effect of level of nutrition on fertility and milking ability of heifers

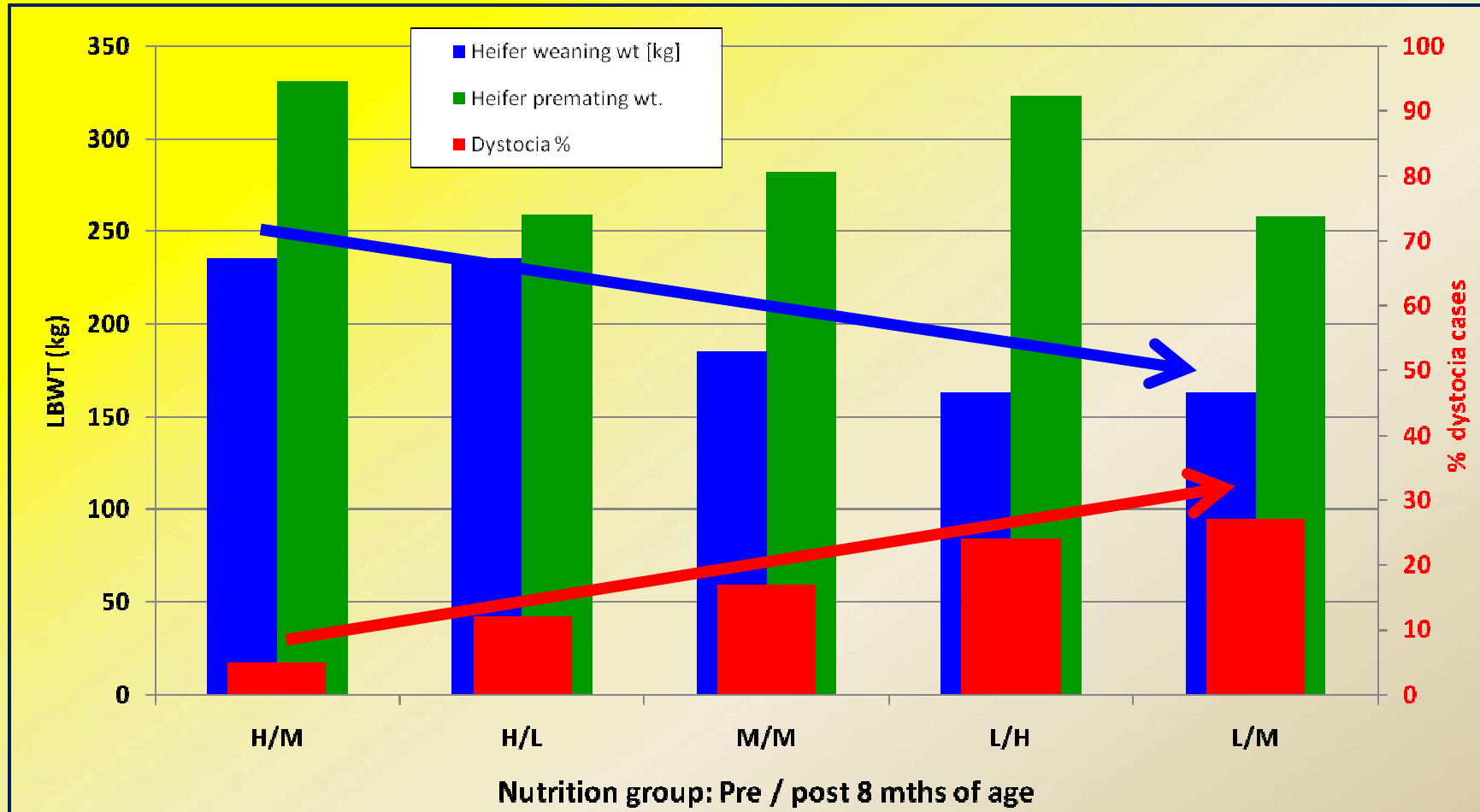
Level of nutrition*	H/M	H/L	M/M	L/H	L/M
Heifer weaning wt [kg]	235	235	185	163	163
Heifer pre mating wt.	331	259	282	323	258
Calving %	95	85	90	94	75
Dystocia %	5	12	17	24	27
Calf BWT	27.5	27.5	28.5	29	30.5
Milk yield (l/day)	4.1	4.9	4.2	5.9	6.1
Weaning %	89	75	65	67	60
240 day weaning wt.	218	236	221	241	259
Total kg weaned / 100 cows	19402	17700	14365	16147	15540

*High, Medium or Low level of nutrition in the periods 2-8 months of age and 8-14 months of age.
 Johnsson & Obst, (1982), ASAP. 13:460

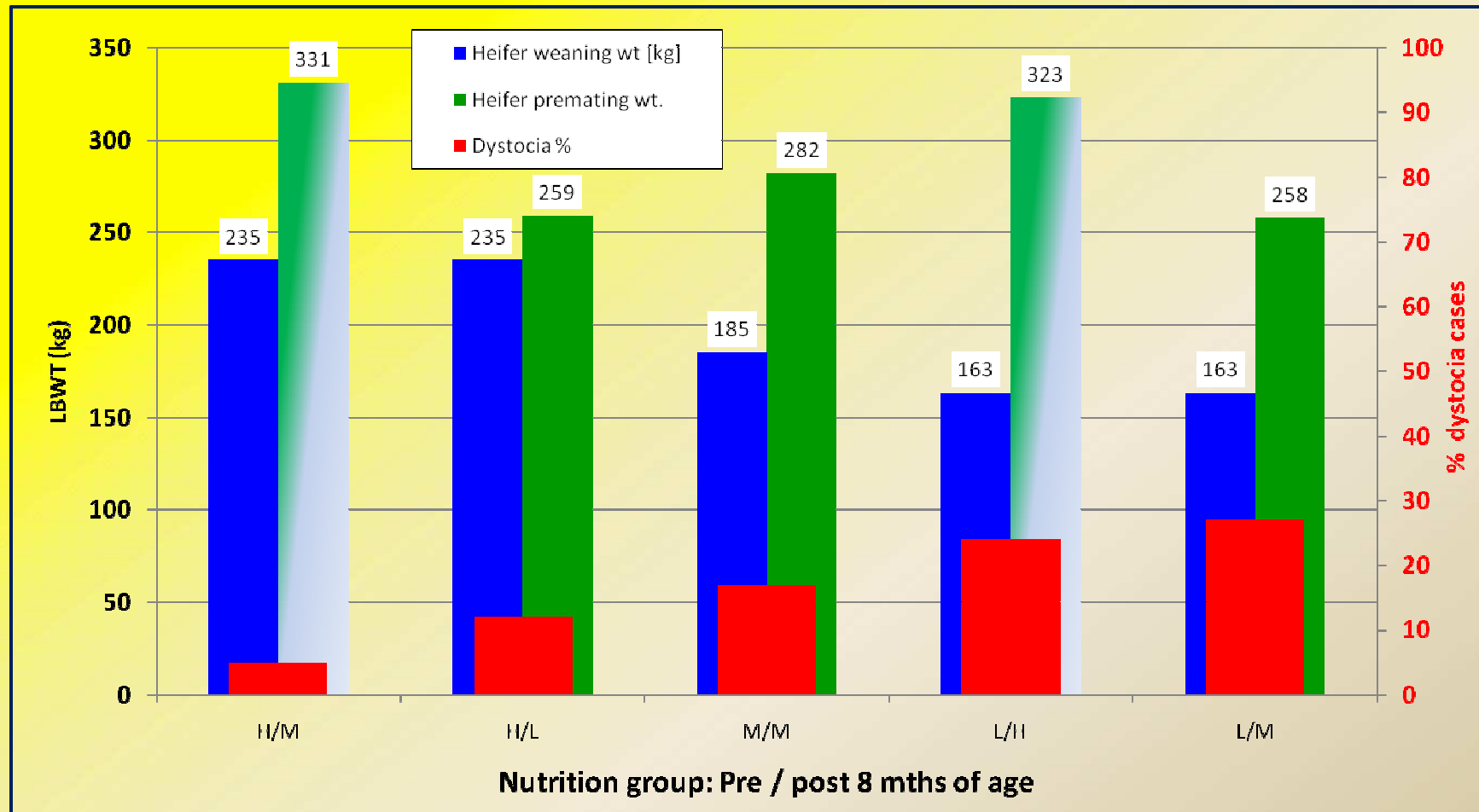
Dystocia: timing of growth



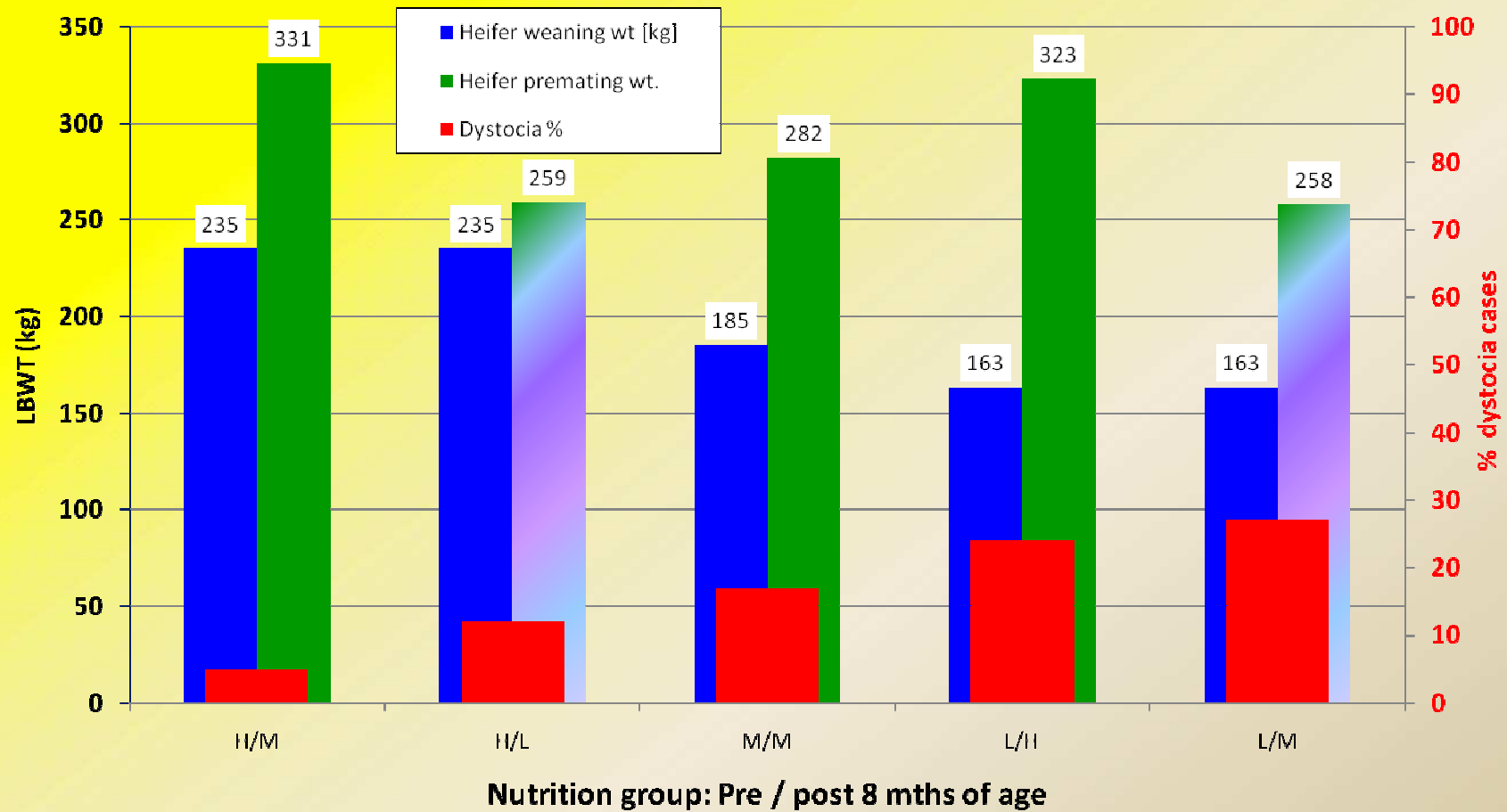
Dystocia: timing of growth



Catch up after weaning: No



Slow growth after wean: No



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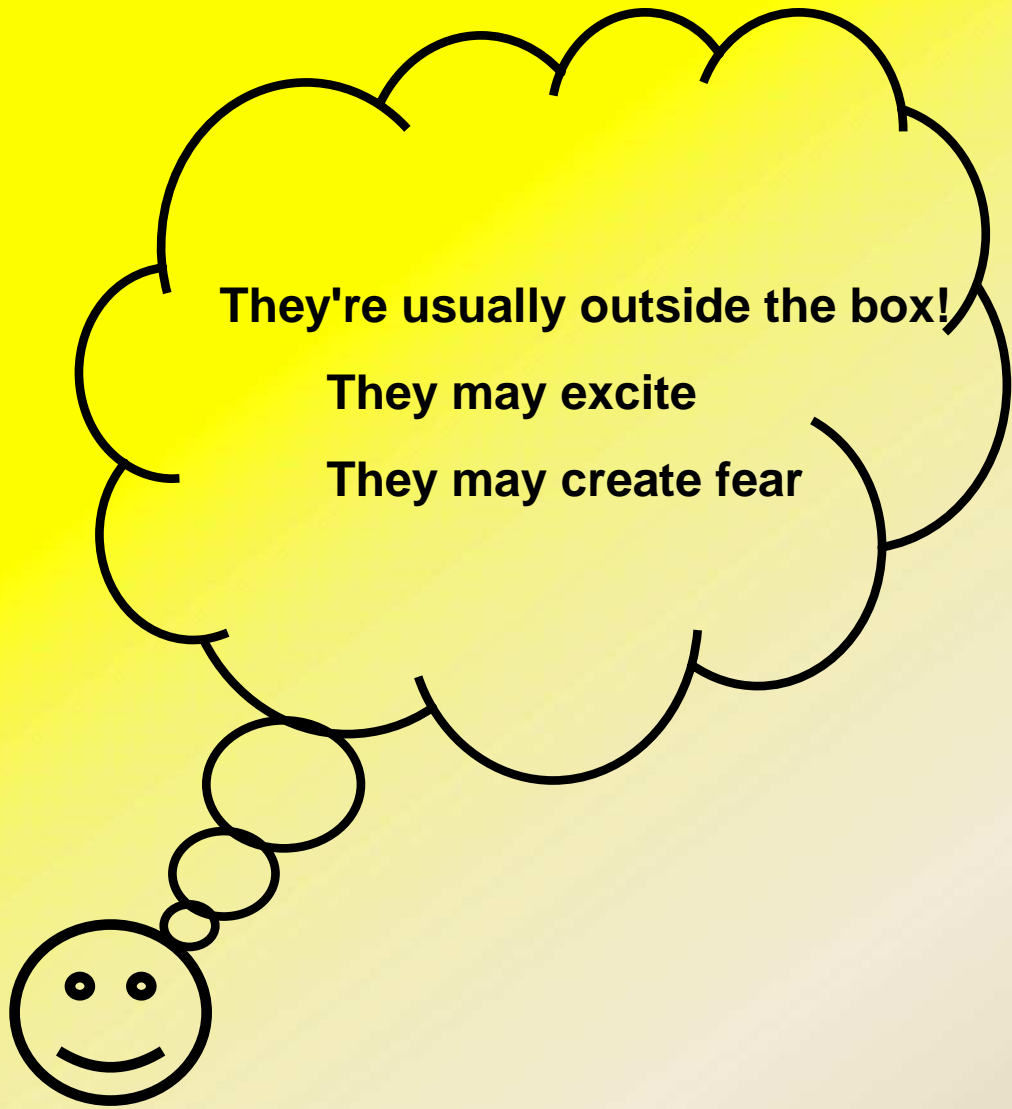
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What is it about dreams?





Reality

Early selection for CMWt

70% heifer retention

6 week joining + 100% PTIC

Feed our heifers ✓ ✓ ✓



Comments & questions

