

Extended lactation cows. Are they worth it?

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Background

- Honours in Animal Science undertaken at University Of Adelaide 2014/15
- Interest in reproduction and profit drivers in dairy farms
- Gain a better understanding of extended lactation
- Compare reproductive and milk production data
- Define normal versus extended lactation



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Background

- Decreasing herd fertility, locally, nationally and international
- Better nutritional management
- Supplementary feeding
- Twice yearly and all year round calving
- North American genetics
- Carry over cow concept
- Extended lactations i.e. longer than 305 days



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What did we set out to find?

- Define a carry over cow?
 - Seasonal calving herds
 - 365 day inter calving interval versus 547 days
- Define what we wanted to investigate?
 - Reproductive data
 - Milk production data
- Types of farms selected
 - Good computerised record keeping
 - Herd recording
 - Irrigated, supplementary feeding, Holstein Friesian and Reds



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What data did we collect?

- Milk production data
 - Herd test data
 - Milk production, Fat, Protein, Somatic cell count
- Reproductive data
 - Calving date
 - Mating dates
 - Dry off date
 - Next calving date
- Data from on farm recording programs;
 - Dairy Data
 - Mistro
 - Dairy ID



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What did we find?

- Reproduction findings
- Lactation and production findings



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How many cows and lactations?

Farm	Normal lactation	Extended lactation	Total
1	20,120	2,298	22,418
2	7,037	440	7,477
3	2,961	182	3,143
4	870	73	943
5	8,182	719	8,901
Total	39,170	3,712	42,882



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Reproductive parameters

* indicates statistical difference between the cows with normal and extended lactations of $P < 0.001$

Reproductive parameter	Number of observations	Normal lactation	Extended lactation
Inter-calving interval	13972	399.9 ± 8.29	$461.3 \pm 12.15^*$
Waiting period	23121	69.2 ± 12.48	$86.4 \pm 12.45^*$
Days open	23121	197.3 ± 42.94	$306.2 \pm 42.9^*$
Number of services	23121	2.6 ± 0.55	$3.7 \pm 0.55^*$



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Reproductive findings

Insemination patterns	Normal lactation	Extended lactation
Normal returns	31.5% (28.51-34.66)	41.0% (37.32-44.87)*
Short returns	10.0% (7.41-13.38)	15.0% (11.14-19.81)*
Long returns	56.2% (31.16-78.45)	76.5% (53.42-90.26)*



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Reproductive findings

Reproductive parameter	Normal lactation	Extended lactation
100-days submission rate	82.3% (77.10-86.48)	77.5% (71.21-82.76)*
200-days non-in calf rate	40.6% (21.35-63.25)	70.2% (48.29-85.62)*



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Milk production findings

Mean \pm standard errors of the average daily milk yield per cow per day with normal (up to 305 days) or extended (greater than 305 days) lactation among age categories. Age category 1= 2year olds, age category 2= 3, 4 & 5 year olds, age category 3= 6, 7, 8 & 9 year olds, and age category 4> 9 year olds

Age category	Normal lactation	Extended lactation
1	25.8 \pm 0.21	-
2	30.5 \pm 0.20	19.7 \pm 0.22*
3	34.0 \pm 0.20	19.5 \pm 0.22*
4	31.8 \pm 0.21	19.2 \pm 0.26*



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Predicted milk yield

Lactation number	Normal lactation	Extended lactation
1	7,856.4	10,076.2
2	8,454.7	9,383.3
3	9,425.4	9,597.3
4	9,852.9	10,420.1
5	10,420.1	10,544.5
6	10,544.5	10,245.0
7	10,245.0	10,544.5
8	10,147.6	10,245.0



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Hypothetical cow model

Combination	Hypothetical days between two calving's							
	L1	L2	L3	L4	L5	L6	L7	L8
1	365	365	365	365	365	365	365	365
2	365	547.5	365	365	365	365	365	182.5
3	365	547.5	547.5	365	365	365	365	0
4	365	547.5	547.5	547.5	365	365	182.5	0
5	547.5	365	365	365	365	365	365	182.5
6	547.5	547.5	365	365	365	365	365	0
7	547.5	547.5	547.5	365	365	365	182.5	0
8	547.5	547.5	547.5	547.5	365	365	0	0
9	547.5	547.5	547.5	547.5	547.5	182.5	0	0



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Lifetime milk production

Combination	Days between two calving's								Lifetime milk production
	L1	L2	L3	L4	L5	L6	L7	L8	
1	365	365	365	365	365	365	365	365	76,947
2	365	547.5	365	365	365	365	365	182.5	67,728
3	365	547.5	547.5	365	365	365	365	0	67,899
4	365	547.5	547.5	547.5	365	365	182.5	0	57,464
5	547.5	365	365	365	365	365	365	182.5	69,019
6	547.5	547.5	365	365	365	365	365	0	69,947
7	547.5	547.5	547.5	365	365	365	182.5	0	59,874
8	547.5	547.5	547.5	547.5	365	365	0	0	59,684
9	547.5	547.5	547.5	547.5	547.5	182.5	0	0	48,124



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What are the causes of carry over lactations?

- North American Genotype; production, body condition mobilisation
- Body condition mobilisation early lactation
- Anoestrus
- Uterine infections
- Post calving illness
- Selection
- Lack of replacements



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What can we do?

- Improved transition management
- Early treatment of post calving problems
- Early intervention in anoestrus cows
- Improved heat detection
- Selection of better fertility genetics
- Understand the cost of lost production
- Grow bigger better heifers



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Further research

- Look into fat and protein production from these animals
- Metabolic disease
- Uterine disease
- Sire or genetic component
- Nutrition effect



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