# Nutritional Manipulations to Improve Health and Fertility

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### **Holstein Cows at Peak Production**



#### Average Holstein cow peaks at 45 kg/day

- Maintenance energy required: 15 Mcal/d of ME
- Energy for milk synthesis 55 Mcal of ME/d
- Total energy needed = 70 Mcal of ME/d
- Therefore, consuming at 4.6 times maintenance

#### Selz-Pralle Aftershock peaked at 123 kg/day



- Maintenance energy required: 16 Mcal/d of ME
- Energy for milk synthesis 134 Mcal of ME/d
- Total energy needed = 150 Mcal of ME/d
- Therefore, consuming at 9.3 times maintenance

Santos et al. (2010) Reprod. Dom. Rum. VII:387-404  $\,^5$ 

Variable	Cyclic, % (n/n)	Adjusted OR (95% CI)	P value
BCS change from calving to 65	DIM		
Lost 1 unit or more	58.7 (279/475)	Referent	
Lost < 1 unit	74.6 (2,507/3,361)	1.96 (1.52, 2.52)	< 0.001
No change	80.9 (2,071/2,560)	2.39 (1.74, 3.28)	< 0.001
Milk yield in the first 90 DIM			
Q1, 32.1 kg/d	72.7 (1,011/1,390)	Referent	
Q2, 39.1 kg/d	77.6 (1,204/1,552)	1.34 (1.13, 1.60)	< 0.01
Q3, 43.6 kg/d	77.6 (1,350/1,739)	1.36 (1.15, 1.62)	< 0.001
Q4, 50.0 kg/d	75.3 (1,292/1,715)	1.21 (1.02, 1.43)	0.04
Variable	Pregnant, % (n/n)	Adjusted OR (95% CI)	P value
BCS change from calving to 65	DIM		
Lost 1 unit or more	28.9 (132/472)	Referent	
Lost < 1 unit	37.3 (1204/3230)	1.42 (1.13, 1.79)	< 0.01
No change	41.6 (1008/2422)	1.69 (1.32, 2.17)	< 0.001
Milk yield in the first 90 DIM			
Q1, 32.1 kg/d	37.2 (496/1,334)	Referent	
Q2, 39.1 kg/d	38.9 (576/1,481)	1.06 (0.91, 1.24)	0.42
Q3, 43.6 kg/d	39.3 (652/1,661)	1.09 (0.93, 1.26)	0.26
			0.05





















## **Prepartum Diet Formulation**

### Focus on 4 important aspects

- Avoid excessive caloric intake (gain of adipose tissue or BCS)
- ✓ Reduce fatty liver and ketosis
- ✓ Prevent hypocalcemia
- ✓ Supply adequate amount of metabolizable protein





































✓ Source of FA rich in omega-6 and omega-3 seem the most bioactive



NOTES