Pre-calving Nutrition of the Suckler Cow

Beef & Sheep Outlook for 2017 Meeting

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Thin Cows Near Calving

- Keep them on ration to put on condition
- Give them the best forage available
- Avoid overloading with concentrates
- If cows are losing excessive weight near to end of pregnancy:-
  - – could she be carrying twins? Increases ME requirement by 20-25MJ/d near end of pregnancy
  - – feed issues (access)
  - - other vet issues?

Fat Cows Near Calving

- Can still be losing a bit of weight up to calving
- Meet protein and mineral requirements
- Avoid ‘starvation’ diets for over fat cows
- Ideally take condition off fat cows gradually early in pregnancy – could keep calves on longer

Underfeeding in Pregnancy

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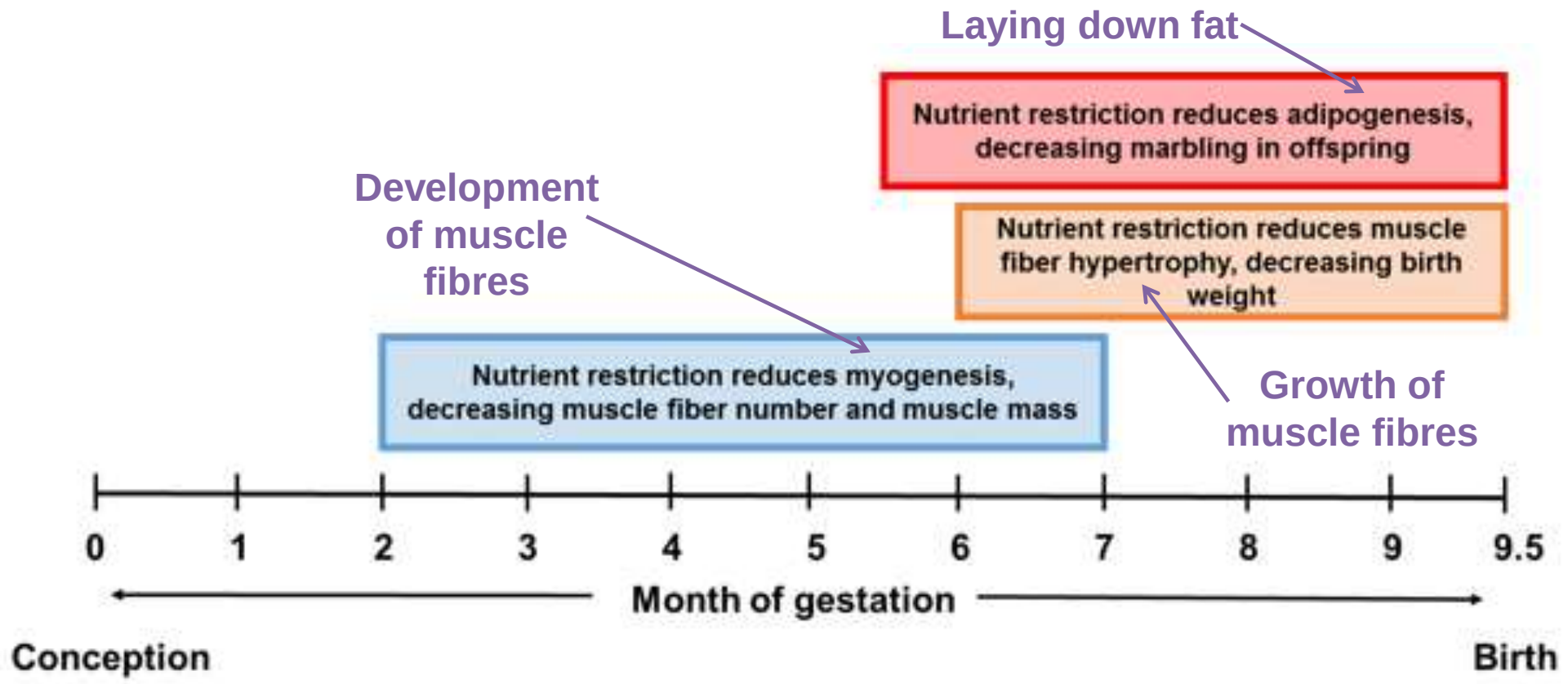

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Restrictive Feeding

Restricted feeding of beef cows pre-calving (Teagasc):

- Low levels of feeding during last third of pregnancy will not result in predictable effects on calf birth weight or calving difficulty
- Suckler cows will use their reserves to buffer the nutrient supply to the calf
- Be careful not to over restrict cows pre-calving. Result is
  - weaker calves
  - calving difficulty
  - poorer colostrum quality and yield
  - delayed onset of cyclicity

Effect of plane of nutrition during last 3 months of pregnancy for spring calving cows

ME intake (MJ/d)	40	53	66	78
Calf birth weight (kg)	37	40	39	37
Cow live weight change to pre-calving (kg)	-10	+20	+45	+65
Cow milk yield	no significant difference			
Calf growth rate	no significant difference			

Dystocia and Body Condition

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Nutritional restriction

"Severe nutritional restriction during the last trimester, to the extent that the dam loses body condition leading to reduced placental and fetal weight and pelvic area, can result in dystocia and stillbirth due to uterine inertia and inadequate relaxation of the pelvic ligaments" [1]

Nutritional excess

"Overfeeding during the last trimester, to the point that dam body condition score is increased can result in …excess adipose deposition in the birth canal … with consequent dystocia and stillbirth" [1]

[1]Mee, J.F., 2008. Prevalence and risk factors for dystocia in dairy cattle: A review. The Veterinary Journal, 176(1), pp.93-101.

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Bovine Dystocia – Nutrition and Birthweight

"A common perception among producers is the higher rates of feeding during the dry period will result in heavier and larger calves at birth. However, research does not, in general, support this"

"…stronger evidence…physiological function may be altered by maternal nutrient supply during late gestation...underfeeding of either energy or protein during late gestation in beef cattle resulted in calves that were less able to generate heat to maintain body temperature after birth. These effects occurred despite no significant difference in birthweight."

Drackley, J.K., 2011. The other side of the transition: Effects on colostrum and calf. In *Proc., Tri-State Dairy Nutrition Conference, Ohio State University, Columbus. Pg* (pp. 71-77).

"Studies with dairy heifers and cows have shown little effect of maternal nutrition during the last month of gestation on calf birthweight or dystocia"

Mee, J.F., 2008. Prevalence and risk factors for dystocia in dairy cattle: A review. *The Veterinary Journal*, *176*(1), pp.93-101.

Feeding of Silage Pre-calving

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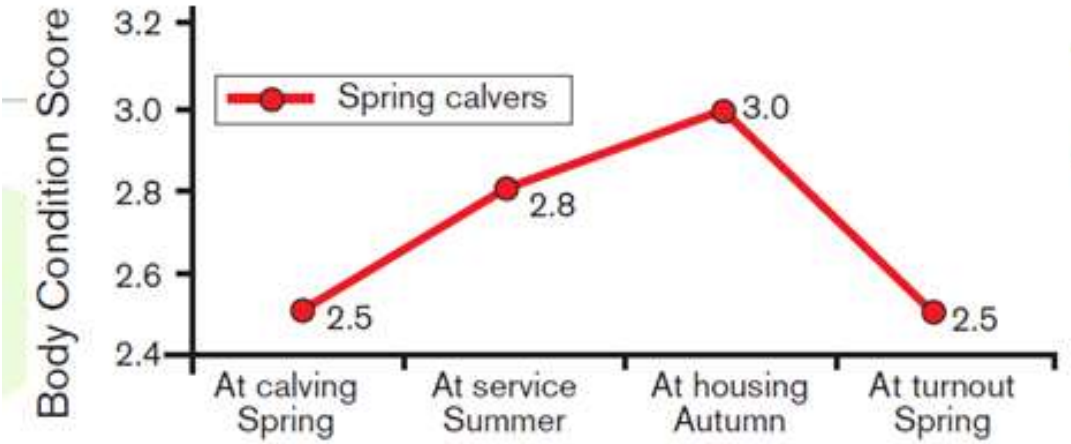
Spring calvers in good condition

(feed 1kg extra below for thin cows):

- 72 D value: Feed restricted access silage (80% requirements)
- 65 D value: Feed silage ad lib
- 60 D value: Feed silage ad lib + 0.5kg to 1.0 kg concentrates
- 55 D value: Feed silage ad lib + 1.0 kg concentrates



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Supplementary DUP

Target minimum 9% protein in ration

Suggest feeding 0.33kg soya 4 weeks pre-calving

Benefits:

- Quicker onset of estrus
- Heifers fed by-pass protein had shorter intervals from calving to first oestrus and an increase in first-service conception rates
- Better calf survivability
- Colostrum quality and quantity

What Affects Birth Weight?

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- Breed
- Genetics of sire and dam
- Length of gestation (heritable)
- Age and size of dam
- Sex of calf
- Environmental factors - temperature
- Nutrition and health of the dam

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Feeding for Colostrum Quality

- Thin cows will have poorer quality colostrum
- Adequate protein and energy is needed for good colostrum volume and quality (antibody content)
- Poor nutrition of the dam affects the calf's absorption of antibodies from colostrum
- Ensure vitamin and mineral requirements of the cow are met (selenium and vitamin E most important)
- Transfer of antibodies from blood of cow into colostrum starts about 5 weeks prior to calving, and is maximal in the last 2 weeks before calving.
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Cow Nutrition and Colostrum

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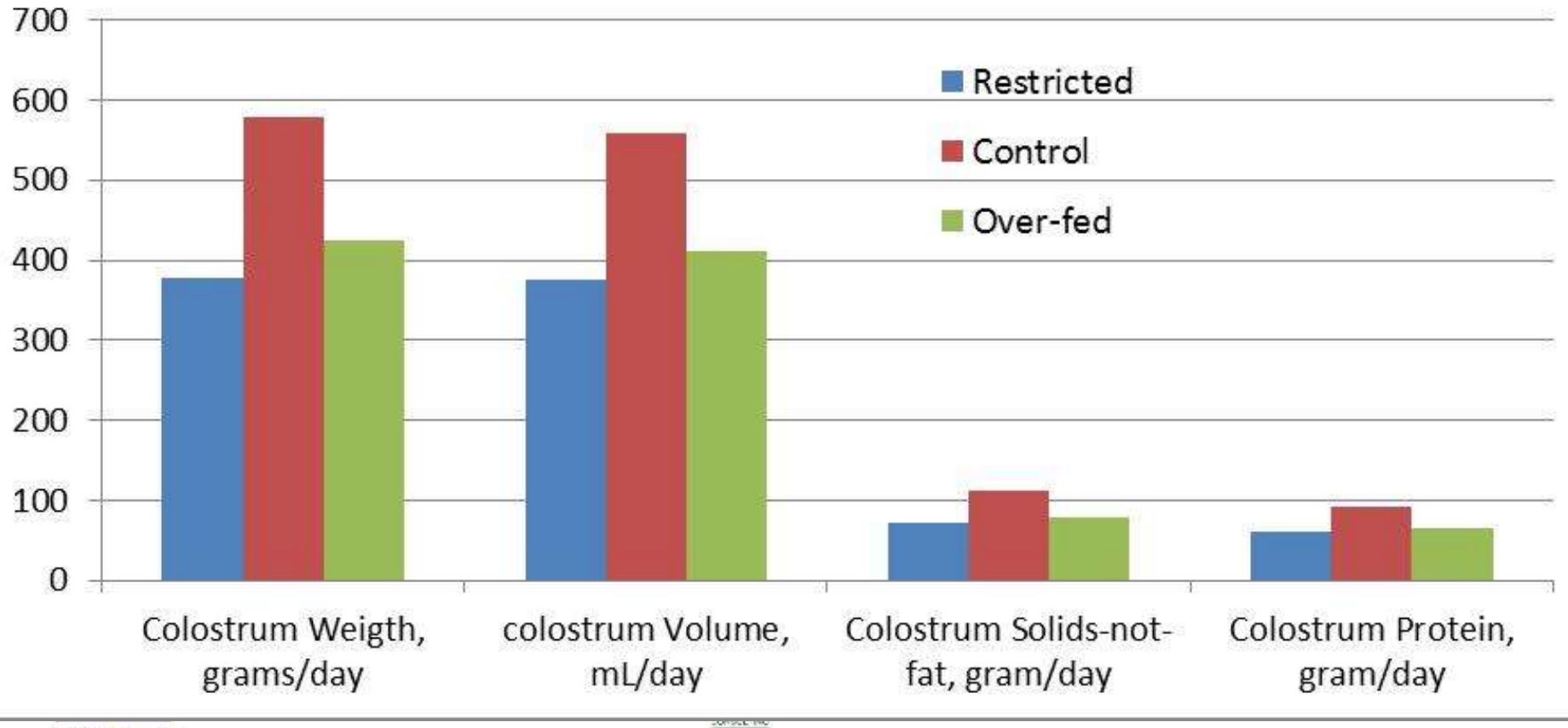
Figure 1. Effect of dam gestation nutrient supply on colostrum yeild and composition



Source: University of Florida

The Three Qs of Colostrum

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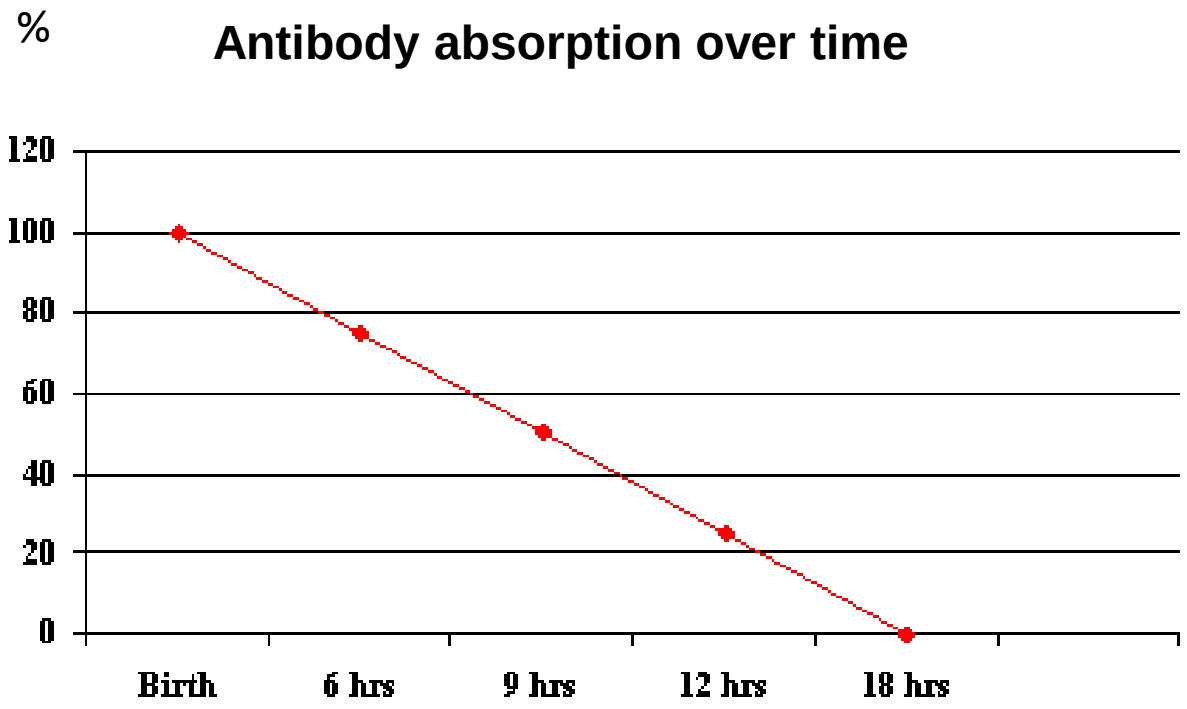
Quickly, Quality, Quantity!



- 50ml/kg birthweight in the first hour
- This would take around 20-26 minutes of natural suckling
- 10% body weight in total

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Mineral Supply in Silage

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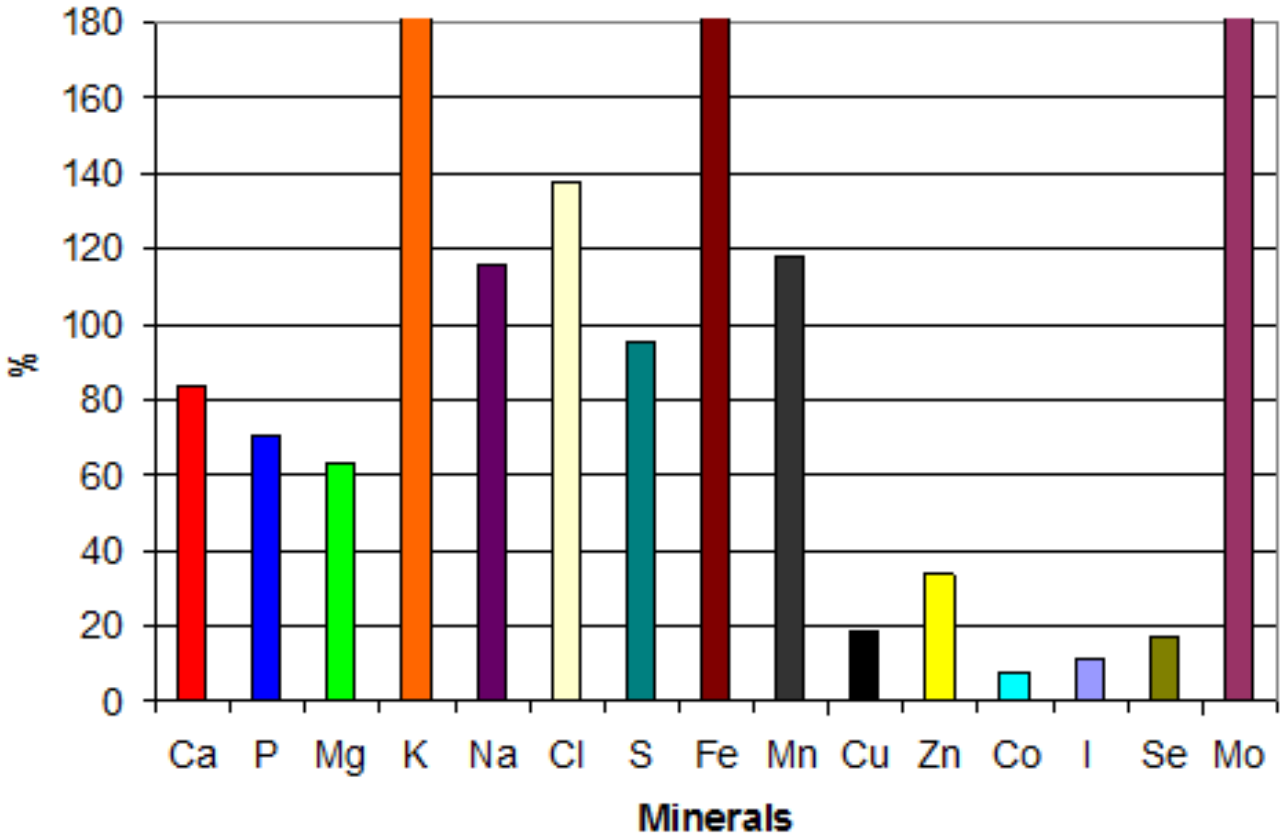
Grass silage as a mineral source for dairy cows (100% = daily requirement)



Key minerals and vitamins pre-calving:

- Calcium
- Magnesium
- Selenium
- Iodine
- Vitamin D
- Vitamin E

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Vitamin E Pre-calving

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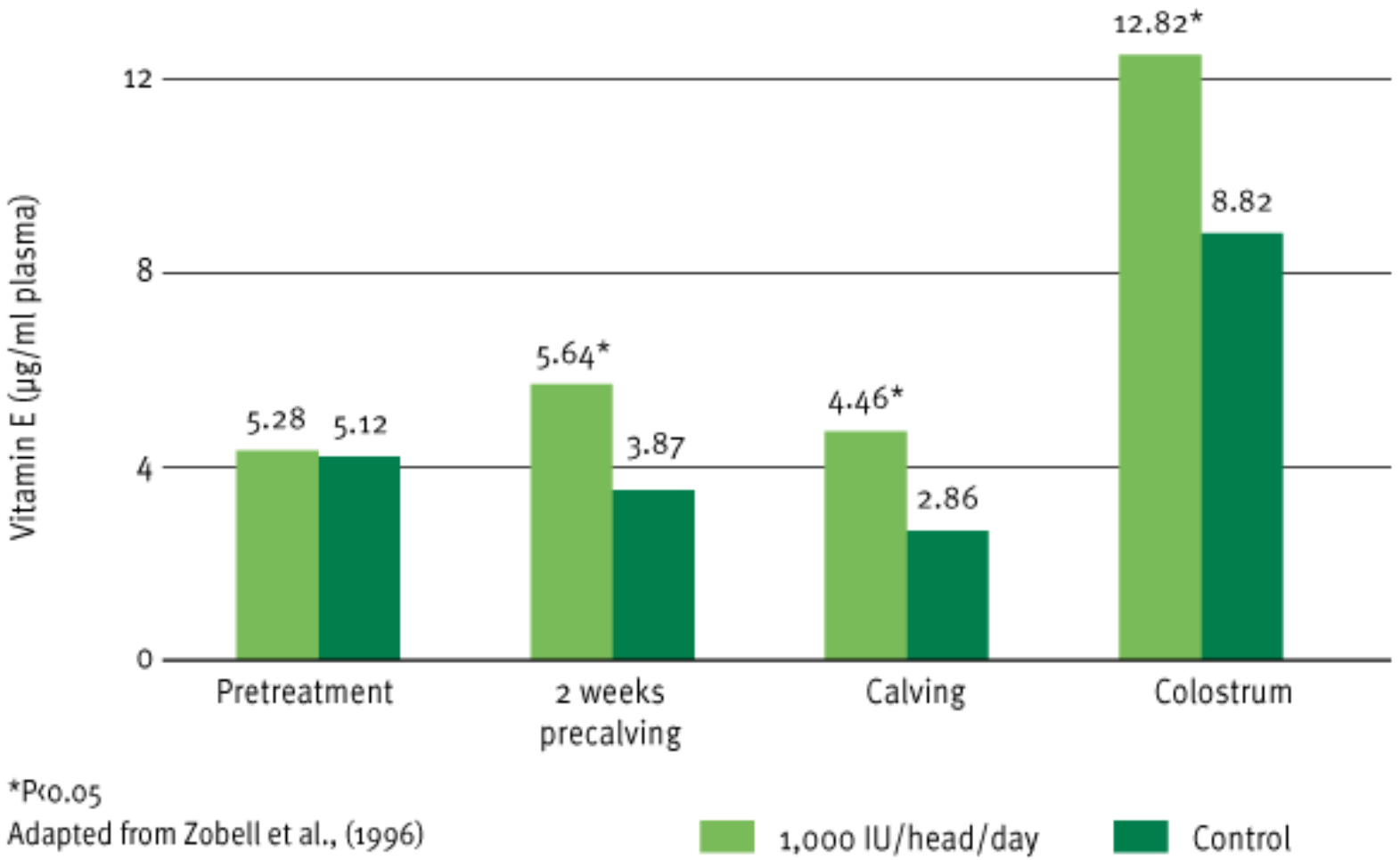
Figure 4-12: Effect of Supplemental Vitamin E on Plasma Concentration in Beef Cows



*P<0.05

Adapted from Zobell et al., (1996)

From Calving to Conception

A newly-calved cow has around 80 days to recover and conceive their next pregnancy to maintain a 365-day calving interval

- produce milk for a calf and increase supply as the calf grows
- recover from giving birth
- re-start estrus cycles
- maintain body condition

To get cows back in calf quickly they need to be on rising plane of nutrition, think about

- feed type
- feed access
- take good care of heifers/thin cows

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The Lactating Cow

A 650kg cow requires ~128MJ of energy to support 10 litres milk

	Poor 9.9ME, 11% CP	Average 10.6ME, 13% CP	Good 11.2ME, 14% CP
Silage	33kg	38kg	45kg
Concentrate	4kg	2.5kg	0.5kg
Minerals	0.15kg	0.15kg	0.15kg

Post-calving diets depend on silage quality

Body Condition and Fertility

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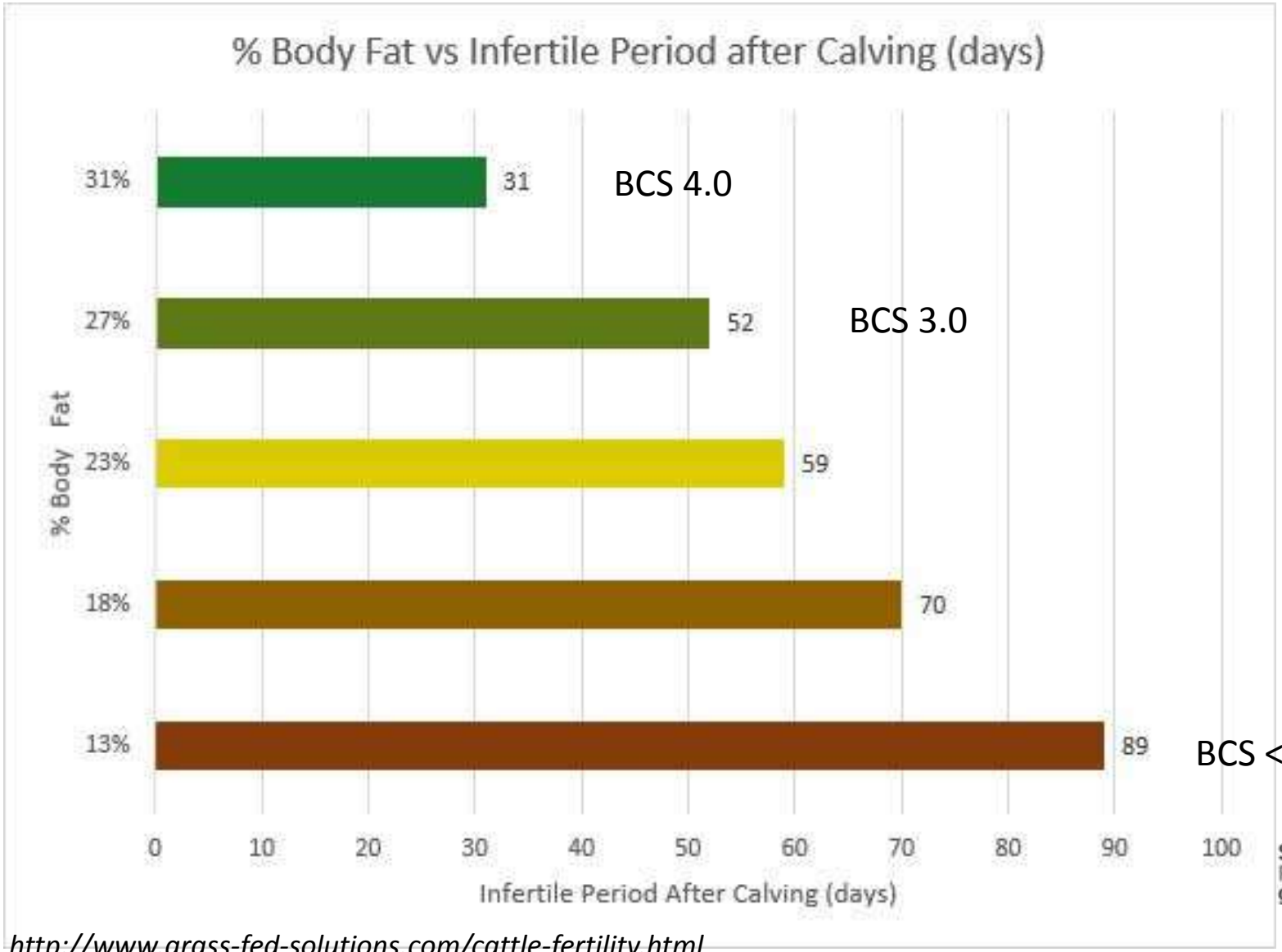

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http://www.grass-fed-solutions.com/cattle-fertility.html

Body Condition and Fertility

BCS at Calving	Calving Interval (days)	Calves weaned/100 cows to bull
Below 2	418	78
2 to 2.5	382	85
2.5 to 3	**364**	**95**
Over 3.5	358	93

Source: Drennan and Berry 2006

Take Home Messages

- Ensure feeding according to condition and based on forage quality
- Beware underfeeding pre-calving for calf health
- Meet protein requirements for rumen function, colostrum yield and quality (9% dry, 12% lactating)
- Mineral with high Mag (10%), selenium, iodine and vitamin E
- Minimise weight loss post-calving for fertility