

Management in Late Gestation is Important to Two Calf Crops

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The most critical period in the production year is the last 60 to 90 days before calving. Not only are dramatic changes occurring in the cow, but this period also sets the stage for reproductive success or failure in the months that follow.

Tremendous Change

Considerable tissue growth and change occurs during late gestation as a result the nutrient needs of the cow are greatly increased. A majority of calf growth occurs during these last 90 days. At the start of this period, the calf weighs less than 50% of its final weight. In addition to rapid fetal growth, the uterus, placenta and surrounding fetal fluids must also increase in size.

Mammary development in preparation for lactation is also occurring. Proper nutrition and hormonal support is essential for adequate milk production after calving.

While increase in cow weight and mammary development are visible signs of physiological change during late gestation, there are several unseen changes as well. Colostral (first milk) antibodies are produced, and restrictions in nutrition during this period results in poor colostrum quality and lower calf survival.

Although not fully understood, nutrition during late gestation affects reproductive hormone production from the brain as well as follicular (egg and associated structures) development on the ovary. These reproductive effects are a result of both nutritional reserves and types of nutrients available during late gestation.

Impact of Body Condition Score at Calving

One of the best understood effects of late gestation nutrition is on energy reserves at the time of calving. Cows in body condition score BCS 5 (1 = emaciated to 9 = obese) or better at calving have fewer days to first estrus and increased pregnancy rates. Cows calving in $BCS \leq 4$ had a 9% to 29% lower pregnancy rate compared to cows calving at $BCS \geq 5$. Research from Oklahoma indicates that changes in BCS between 4 and 6 have a greater impact on pregnancy rate than changes in BCS above 6 or below 4. In other words, little improvement in pregnancy rates is seen when cows calve in BCS above 6 while pregnancy rate does not get much worse below BCS 4 (Figure 1).

Relative Influence of Body Condition Score at Calving On Pregnancy Rate



Adapted from Selk et al., 1988

Cows calving at BCS ≤ 4 that conceive become pregnant later in the breeding season (Table 1) and calve later in the next calving season. Late calving cows are more likely to fail to conceive during the breeding season. Calves born late in the calving season will be approximately 35 to 40 lbs. lighter at weaning for every 21-day delay in calving.

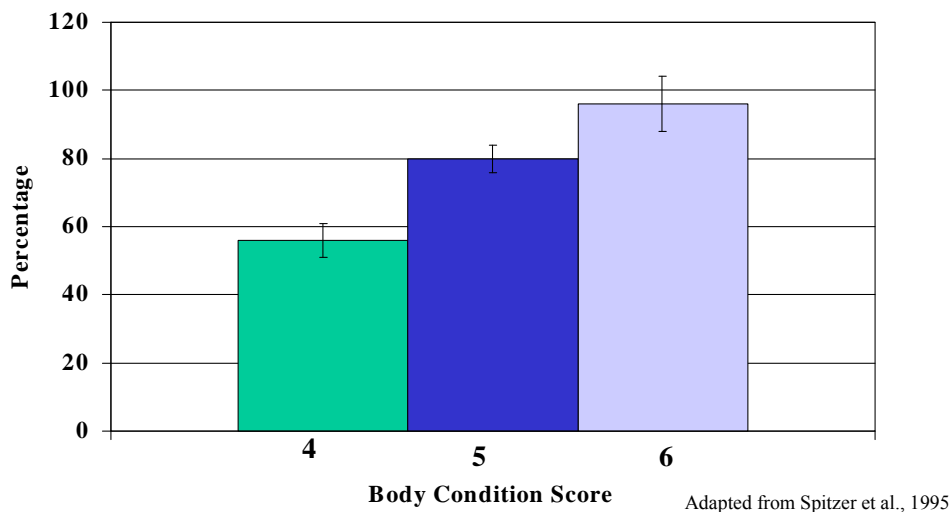
Table 1. Effect of Body Condition Score at Calving on Cumulative Pregnancy Rates

	BCS	Day of the Breeding Season		
		20 d	40 d	60 d
Mature Cows (Richards et al., 1986)		Cumulative % Pregnant		
	≤ 4	41	67	84
	≥ 5	51	79	91
First Calf heifers (Spitzer et al., 1995)		Cumulative % Pregnant		
	4	27	43	56
	5	35	65	80
	6	47	90	96

First calf heifers are even more sensitive to the effects of BCS at calving on pregnancy rates. Dramatic decreases of 40 % to 50 % (Figure 2) occur as heifers drop from BCS 6 to BCS 4. In contrast to mature cows, heifers exhibit a significant decrease of approximately 16 % in pregnancy rate between BCS 6 and BCS 5. Therefore, the optimum BCS at calving is 6 or 7 in heifers.

Poorly fed heifers have more stillborn calves, weaker calves, lower calf survival, and poor colostrum. Heifer need to gain 2 to 2.5 lbs per day to continue to grow while the fetus is also growing.

Figure 2. Effect of Body Condition Score at Calving on Subsequent Pregnancy Rate in First Calf Heifers



Management during late gestation

Cow energy requirements increase by 25% compared to mid-gestation, and protein needs increase by 10%. Demands for calcium and phosphorus increase because of fetal growth. In addition, high levels of copper, selenium, zinc as well as vitamin A & D are needed for proper fetal body and immune system development.

Cows will need to gain at least 100 lbs during late gestation to accommodate this tissue growth without losing body condition. Without fail, cows should be body condition scored at least 90 days before calving. Cows that are thin (BCS ≤ 4) or young cows should be fed separately from the mature cow herd.

The effects of severe winter weather should not be ignored. Extended (more than 5 days) of cold, windy or wet weather can increase cow energy requirements by 10 to 20%. In most cases, cows will increase hay consumption if hay quality is good. Otherwise, additional supplements should be fed during extreme weather. Normal feeding can resume when the weather breaks.