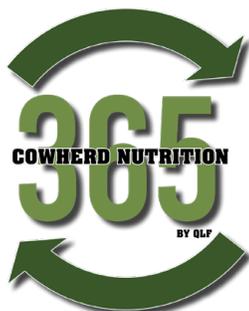


# TECHNICAL BULLETIN

## COW/CALF



# CALVING & BREEDING: THE IMPORTANCE OF QUALITY LACTATION & EARLY CONCEPTION



Providing a balanced nutrition program for the cowherd is important to maximize herd productivity. An economically productive beef cow must: deliver a live calf every year, return to estrus after calving, conceive early in the breeding season, wean a heavy calf and nourish a developing fetus; all on minimal inputs.

Maternal nutrient demands increase throughout late gestation and into early lactation. The nutrient requirements of late gestation and lactating females are listed in Table 1. During late gestation, beef cows require about 15 to 20% more protein than cows in mid gestation. The additional protein is needed to support the demands of the developing mammary gland, fetus

and uterus just prior to calving. Protein requirements for lactating cows vary with age, size and milk production. Cows with superior milking ability require 20-30% more protein than average milking beef cows. The additional protein required after calving is needed to support lactation, reproductive tissue repair, conception and early embryonic development. A majority of the increased demand for protein during early lactation is needed for milk protein synthesis.

**Table 1.**

	Late Gestation		Early Lactation		Late Lactation	
	Crude Protein, %*	TDN, %*	Crude Protein, %*	TDN, %*	Crude Protein, %*	TDN, %*
Mature Cows	8.6	55.0	10.5	60.0	8.7	55.1
1st Calf Heifers	9.0	58.3	10.5	62.0	9.0	57.0

Adapted from Nutrient Requirement of Beef Cattle, 2000  
\*As a percent of dry matter intake

### Early Lactation

Proper maternal nutrition prior to calving is essential for colostrum quality and quantity. Beef cows begin to produce colostrum 5 weeks before calving. Effective passive transfer of colostrum is vital to calf health and immunity. Calves should receive 1 quart of colostrum within 6 hours after birth and a total of 2 to 3 quarts within 12 hours of birth. At 12 hours of age, the gut begins to close and the antibodies found within colostrum become difficult to absorb. Maternal nutrient restriction during late gestation has shown to decrease colostrum nutrient quality and quantity. Table 2 demonstrates the effects of maternal body condition score at calving on colostrum immunoglobulins. Immunoglobulins are proteins that contain antibodies

that protect the calf from disease. Cows in higher body condition scores had more immunoglobulins in their colostrum than thinner cows. More immunoglobulins are likely

**Table 2.**

	Body Condition Score				P-Value
	3	4	5	6	
Calf Serum IgM (mg/dl)	146	157	193	304	0.05
Calf Serum IgG (mg/dl)	1998	2179	2310	2349	0.23

Adapted from Odde, 1997

to result in a greater level of disease protection for the calf.

Milk production postpartum can be influenced by prepartum nutrition of the dam. Cows receiving an energy deficient gestation diet during the last 90 days of gestation had lower milk production (Corah et al., 1975). Cows allowed limited rather than ad libitum grazing access during late gestation had a 9% decrease in early lactation milk production (Kearnan and Beal, 1992). Proper maternal nutrition prior to calving could impact postpartum milk production and passive immune transfer thus impacting offspring growth and health.

### Minimizing the Postpartum Interval

The postpartum interval, or the period from calving until the cow conceives, is a critical period in the cowherd production cycle. Minimizing this time period is important to maximize reproductive and economic efficiency of a cow/calf operation. The length of the postpartum interval is limited by uterine involution, or the time needed to repair reproductive tissues to support another pregnancy. Uterine involution typically occurs within 30 days after calving. Factors such as poor nutrition, disease and dystocia will delay normal involution (Funston, 2014).

To maintain herd productivity and profitability, cows must re-breed within 80 – 85 days after calving to maintain a 365 day calving interval. The most important factor influencing pregnancy rate in a cow/calf enterprise is body energy reserves at calving (Wettemann et al., 2003). Body condition score is correlated with several reproductive events such as postpartum interval, services per conception, calving interval, milk production, weaning weight, dystocia, and calf survival. All of which greatly influence the profitability of a cow/calf enterprise (Table 3).

**Table 3.**

BCS	Pregnancy Rate, %	Calving Interval, days	Calf ADG, lb	Calf WW, lb	Calf price, \$/100lb	\$/cow Exposed <sup>a</sup>
3	43	414	1.60	374	96	154
4	61	381	1.75	460	86	241
5	86	364	1.85	514	81	358
6	93	364	1.85	514	81	387

<sup>a</sup>Income per calf x pregnancy rate  
Adapted from Kunkle et al., 1994

Cows should calve in a body condition score of 5 to 6 to ensure optimal reproductive performance. Cows cycling early in the breeding season will have more opportunities to become pregnant during a limited breeding season. Breeding season length will influence uniformity of the calves and their value at weaning. In many situations, cows in poor condition do not re-breed. Failure to re-breed can have major economic consequences. Proper supplementation prior to calving and through breeding can improve cow condition and reproductive performance.

### Conclusion

Maternal nutritional status prior to calving and through breeding has the greatest impact on mammary development, calf health and reproductive performance. For spring calving cow herds, late gestation, lactation and breeding coincide with winter and early spring when forage quality and quantity are limited. Whereas for fall calving herds, this critical time falls in late summer and early fall when many pasture conditions are losing quality and quantity. A well balanced supplementation program may reduce negative effects caused by maternal nutrient deficiency. QLF offers a targeted liquid supplementation program for cow calf operators directly impacting forage utilization, productivity and herd health. These cow calf products are designed to enhance forage utilization by supplying a source of degradable protein and energy to help optimize ruminal fermentation critical for herd health, calf performance and reproductive efficiency.

#### Citations

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