

What is Cow Reproduction Worth to You?

The single most important factor affecting the net returns of cow-calf producers is reproduction. In order to maximize returns, it is essential to obtain one calf from each cow every year. Gestation lasts 280 days in cattle, and therefore animals must be impregnated within 85 days of delivery to maintain the optimum calving interval of 12 months. After calving, it takes between 45 and 60 days to re-establish ovarian cyclicity, leaving only a 25 to 40 day window for conception. Proper nutrition is vital to accomplish this goal.

Everyone recognizes the importance of energy and protein nutrition. Deficiency in either of these two areas has a pronounced affect on body weight and body condition. Due to the differences between breeds, frame sizes, and fetal weight, body condition may be a better indication of the overall health and nutrition of cattle. With regard to reproduction, body condition is related to:

- days to estrus
- services per conception
- the percentage of open cows
- calving interval of cows that breed
- milk production
- weaning weight of the calf

Body condition score must be maintained between five and six to optimize reproductive performance of cattle. While not as obvious, the trace minerals are also essential to the maintenance of body weight and body condition as well as reproduction.

Some of the most commonly researched trace minerals are zinc, copper, and manganese. Each of these minerals is closely related to reproduction in cattle. Supplemental zinc has been shown to increase conception and calving rates.

Copper deficiency has been associated with suboptimal ovarian activity, delayed or depressed estrus, reduced conception rates, and calving difficulty. While the role of manganese in reproduction is not fully understood, deficiency of manganese can cause a number of problems. Manganese deficiency is associated with, but not limited to: anestrus, irregular return to estrus, extended anestrus, poor follicular development, delayed ovulation, reduced conception rates, and increased abortion rates.

Supplementation of these three trace minerals at NRC (1996) concentrations may help producers avoid problems associated with deficiency. However, there are a number of different sources of these minerals available and it can be difficult to choose which source is the best. The inorganic sulfates or oxides forms of these minerals are probably the most common forms on the market. Inorganic trace minerals can prevent deficiency; however, they may not be completely digested and absorbed, therefore some portion remains unavailable to the animal. In addition, these minerals are unprotected and can form complexes with other minerals or dietary factors rendering them unavailable. For these reasons, inorganic trace minerals are often fed at greater than NRC levels, but research has shown that feeding too much of these minerals can have a detrimental affect on reproduction.

Organic trace minerals have been developed to prevent the problems inherent in feeding inorganic minerals. By their very nature, organic minerals are protected and cannot form complexes with other dietary ingredients. Organic trace minerals are also more available for digestion and absorption, meaning they are available to the animal.

QualiTech has been supplying Sea-Questra-Min (SQM™) organic trace minerals to the agricultural industry for almost 40 years.

Recently, QualiTech completed research at Colorado State University evaluating the effects of SQM organic trace minerals on reproduction in beef cattle. The study was designed to examine the differences between inorganic (copper sulfate, zinc sulfate, and manganese sulfate) trace minerals and organic SQM (SQM Cu, SQM Zn, and SQM Mn) trace minerals.

202 crossbred pregnant beef cows were assigned to one of the following three treatments: 1) 100% NRC (1996) recommendation as inorganic trace minerals (Cu, Zn, and Mn; 1xING); 150% NRC (1996) recommendation as inorganic trace minerals (Cu, Zn, and Mn; 1.5xING); and 3) 100% NRC (1996) recommendation as organic trace minerals (Cu, Zn, and Mn; ORG). Trace mineral supplementation began 111 days (d 0) before the average expected calving date and continued through 130 days (d 246) after calving. Some of the results from this study are contained in the table and figure below.

Table 1. Effect of level and source of trace mineral supplementation on reproductive performance of grazing beef cows.

Item	Trace mineral supplementation				Contrasts (P<)	
	1xING	1.5xING	ORG	SE	ORG vs 1xING	ORG vs 1.5xING
Estrus cyclicity, %	27.1	70.6	63.2	5.8	<0.01	0.12
Synchronized estrus response, %	65.0	82.5	84.1	5.0	0.02	0.52
Final pregnancy rate, %	95.1	96.9	98.4	2.2	0.37	0.78

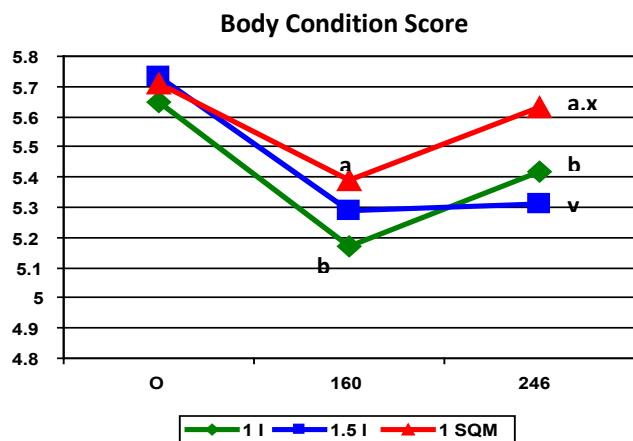


Figure 1. Body condition score of cows fed different sources and levels of trace minerals (a,b; P = 0.04; x,y; P = 0.01)

For more information on this study or any other QualiTech research, please visit our website at: <http://www.qualitechco.com> or call us at 800-328-5870.