

# Nutritional Strategies for Pregnancy Success

*Research suggests post-AI supplementation of essential fatty acids may improve pregnancy rates.*

*by Troy Smith, field editor*

Why is it many well-managed artificial insemination (AI) programs result in 70% or even fewer AI-sired calves? Well, it's not what you might think. It's not because AI didn't work.

Fertilization rates among beef cows and heifers bred by AI are actually quite high. Fertilization is successful about 90% of the time when animals are detected in estrus and semen is present at ovulation.

That information has been shared during past Applied Reproductive Strategies in Beef Cattle (ARSBC) meetings, where presenters explained a significant cause of low pregnancy rates following AI is early embryonic death. The failure of an embryo to survive could be the result of poor oocyte (egg) quality, disease or genetic abnormalities, or the dam's biological responses to stress created by environmental factors, transportation or nutritional insult.

During the November 2020 ARSBC online event, Texas A&M University (TAMU) animal scientist Reinaldo Cooke talked about studies focused on a nutrition management strategy for minimizing embryonic mortality. Conducted in South America and the United States by Oregon State University and TAMU, across different breeds and production environments, the research suggests post-AI supplementation of essential fatty acids is a way of "getting pregnancies to stick."

According to Cooke, essential fatty acid supplementation is not a brand-new concept. Linoleic (omega-6) and linolenic (omega-3) acids are sources of energy for an embryo, play roles in cell membrane function and act as precursors to multiple hormones.

"But linoleic and linolenic acids cannot be synthesized by the body and must be provided in the diet, for cattle or humans," Cooke said.

Common sources of these essential fatty acids include soybeans, cottonseed and flaxseed. Cooke explained these feed ingredients are broken down in the rumen such that essential fatty acids do not reach the small intestine for absorption. The better source is calcium salts of soybean oil (CSSO). The CSSO source readily available in the United States is a product sold under the trade name Essentiom™. It's fed to dairy cows to enhance milk production, but has been shown to reduce pregnancy loss.

In beef cattle studies, a quarter-pound (100 grams) of CSSO has been fed each day during the 21 days following AI. Results show potential for hastening embryo development by 15 days and increasing pregnancy rates to AI by 30%.

Cooke said the potential return on investment in the cost of Essentiom (currently \$2400 per ton) is over 1000%, not including labor and feeding logistics. Economical

supplementation of CSSO to cattle on pasture is likely achieved through self-fed, low-moisture lick tubs.

Expected benefits of essential fatty acid supplementation include improvement of colostrum quality and calf vigor and performance. Cooke also emphasized this technology has been effective for first-calf heifers as well as multiparous cows.

"Supplementation with CSSO is an alternative to enhance pregnancy establishment and overall reproductive performance of *Bos taurus* and *Bos indicus* beef cows managed, respectively, in temperate and tropical environments in the U.S. and across the globe," stated Cooke.

What about supplementing essential fatty acids in cows exposed to natural service? He's studying how pregnancy rates are affected when cows have access to lick tubs containing CSSO during the time they are exposed to bulls.

"The physiology is the same," Cooke said. "It should work." [AJ](#)

*Editor's note: The 2020 ARSBC was a fully online event and featured three sessions: one covering cows and heifers; the second covering bulls; and the third animal health. Links to video presentations delivered during each session can be found at [beefrepro.org](http://beefrepro.org).*