

## Linoleic Acid and Increased Calf Survivability

A Joint Cattle Research Project by Lois Kerr

Ft. Keogh Livestock and Range Research Laboratory, and ARS facility in Miles City, has done a tremendous amount of research to develop economical and environmental feasibility for range livestock production systems. Research there revolves around rangeland management and ecology, beef cattle genetics, range animal nutrition, and beef cattle reproduction.

One particular program, run by scientist Bob Bellows at the Ft. Keogh facility, in cooperation with the Eastern Ag Research Center at Sidney with Jerry Bergman, concerns the use of safflower seed as a food supplement for heifers.

Bellows explains, “We wanted to know if supplemental fat in diets of animals would have an effect on reproduction and on birth weight in the calves.” Researchers also wanted to know if the added fat on calves would help in generating body heat in newborns, thereby lessening stress-related problems.

“Jerry Bergman is one of the premier safflower breeders in the world, so we went to him for help with the particular kind of safflower that we needed,” states Bellows. The Sidney center does the fatty acid work and supplies the proper safflower seed for the Ft. Keogh scientists. The Ft. Keogh center mixes the ration and conducts the field research.

The project calls for heifers to begin receiving safflower seed in their daily rations 55 days before calving. The ration, using polyunsaturated seed, increases fat content from 2.2% to 5.1%. Polyunsaturated linoleic oil is oil that is found in body

fat, which helps regulate body temperature. Body fat containing more linoleic oil reduces stress because of better body warming and makes for healthier calves.

Linoleic acid is a major fuel in cells for heat production. It is stored in the brown adipose tissue. Safflower is rich in linoleic oil. By receiving supplements of this oil, herd health is increased. Bellows states that newborn calves whose mothers received linoleic oil supplements prior to calving produced much more body heat when exposed to a cold room environment than those calves whose mothers did not receive the supplement. Survival of calves increases dramatically if they can produce more body heat at birth.

Bellows says the calves whose mothers received the supplement had slightly higher birth weights, but not enough to cause calving problems.

Researchers also found that heifers receiving a safflower supplement prior to breeding time had higher fertility rates and rebred faster than did those heifers not on the safflower supplements. This safflower supplement research has so far shown positive results on calf cold tolerance and on cow reproduction.

The study is in its third year. Nearly 350 head of cattle have been used for this research.

“There is a lot of excitement over this research, but we are still in the experimental stages,” cautions Bellows. “We need another year yet of consistent results before we can draw definite conclusions.” He adds, “The joint cooperation with the Sidney center has been very positive.”

Jerry Bergman from the Sidney center would like to see further studies done with safflower in livestock rations. “I would like to see studies done on the use of supplementary fat to improve meat quality, to make a value added product for the specialty health niche market,” he says. Bergman believes that increasing monounsaturated dietary fat supplements for butcher cattle would improve the meat fatty acid profile from saturated fat to less saturated fat. This would also tenderize the meat.

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