

BLAME IT ON THE WEATHER

Research shows cold winter means calves born heavier.

BY TROY SMITH

So you kept replacement females with big, roomy pelvic areas and bred them to calving-ease bulls, but you still ran into trouble. You swallowed hard and traded away a little bit of performance to keep birth weights down, but you still had to pull too many too-big calves. Maybe it was the weather.

Research has shown that the major cause of calving difficulty is the size of the calf at birth. That's no revelation to a cowman, but why doesn't careful genetic selection provide consistent relief? Maybe it's the weather.

According to University of Nebraska Beef Cattle Specialist Gene Deutscher, there are two key influences on birth weights — genetics and environment. Deutscher says sires' birth weight expected progeny difference (EPD) values can be an accurate tool for influencing actual average calf birth weights. However, he says, severe winter weather can put



Gene Deutscher

the whammy on even the most carefully planned genetic program.

Of course, dam nutrition and calf sex have some bearing on birth weight, too, but through research conducted at the West Central Research and Extension Center, North Platte, Neb., Deutscher has lent credibility to the theory that cold winters mean heavier calves at birth.

"When a pregnant animal is exposed to cold temperatures,"

he explains, "blood is concentrated internally to maintain core body temperature. Therefore, during prolonged periods of cold weather, the fetus may receive more nutrition because more blood flows to the uterus. And blood flow is the primary determinant of nutrient uptake through the uterus."

Deutscher's study involved evaluation of the effects of air temperature and wind chill during the winters of 1992-93, 1993-94 and 1994-95 on birth weight of calves and calving difficulty during the following February-March calving periods. The research involved approximately 400, 2-year-olds heifers of like breeding that were artificially inseminated, each year to the same four Angus sires. The heifers were fed and managed similarly each year, running on native range until January and then receiving grass hay supplemented with alfalfa. The heifers' precalving body weights, condition scores

and pelvic sizes all fell within narrow ranges.

During each of the three years, weather data was collected from October through March, but the greatest temperature differences were found for the months of December, January and February, which also represented the last three months of gestation. Deutscher says a calf will grow at a rate of up to 34 pound (lb.) per day during the last trimester, but it's the average temperature, rather than a spike, that most likely affects birth weights.

Analyzed by week, month and year, calf birth weights were standardized to remove influences of calf sire and sex and to focus on environmental factors. The accompanying chart shows each year's average temperatures for that most severe three-month period, along with average calf birth weights and calving difficulties.

The winters grew increasingly more mild over the three-year study period, as indicated by air temperatures and wind chills. And as temperatures moderated by about 11 °F calf birth weights averaged 11 lb. lighter in 1995, compared to '93. These numbers show a 1:1 ratio between the changes in temperature and calf birth weights. Along with lighter birth weights came a 22% decrease in calving difficulty.

"The results support previous research showing that birth weights are generally heavier in northern states than in southern states," says Deutscher, "as well as studies showing that cattle raised in Montana gave birth to lighter calves after they were taken to Florida."

To see if keeping pregnant heifers warmer during the 60 days prior to calving could make calving easier, Deutscher also conducted a study of cows wearing coats covering the animals from neck to tail. This two-year experiment involved blanketing 35, 2-year-old heifers kept side-by-side with 35 unblanketed heifers. The heifers' rectal and hide temperatures

Winter temperatures, calf birth weights and calving difficulty

TRAIT	1992-93	1993-94	1994-95	AVG. DIFFERENCE
Avg. air temperature (Dec., Jan., Feb.) (°F)	20	26	31	+11
Wind chill temperature	12	18	22	+10
Calf birth weight (lb.)	82	76	71	-11
Calving difficulty	58%	47%	35%	-22%

were monitored along with calf birth weights and calving difficulties.

Deutscher says the “cow coats” increased the wearers’ hide temperatures by 3° but had no effect on internal body temperature and no effect on calf birth weights or calving difficulties. The coats kept the heifers warmer, but not enough to decrease blood flow to the uterus and reduce calf size. Still, common sense indicates providing wind protection or shelter during the winter to reduce wind chill is beneficial.

Deutscher says more research is needed, and another three-year study of the effects of cold weather on calf birth weights will allow for additional temperature variations.

However, he believes it’s safe to say that after a cold winter, heavier calf birth weights and more calving difficulty may be expected, even with those carefully selected heifers bred to proven, easy-calving sires.

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