

COW/CALF CORNER

The Newsletter

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Heat stress can reduce pregnancy rates

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

The effects of heat stress on reproductive performance of beef cows has been discussed by many animal scientists in a variety of ways. After reviewing the scientific literature available up to 1979, one scientist (Christenson, R.K. 1980, J. Anim. Sci. 51: Suppl II: 53.) wrote that the most serious seasonal variation in reproductive performance was associated with high ambient temperatures and humidity. He further pointed out that pregnancy rates and subsequent calving rates of 10 to 25% were common cows bred in July through September.

Typical Oklahoma summer weather can fit the description of potential heat stress, where many days in a row can exceed 95 degrees and night time lows are often close to 80 degrees. Many hours of the day can be quite hot and cause the slightest rise in body temperature of cattle. Research conducted several years ago at OSU illustrated the possible impact of heat stress of beef cows on their reproductive capability. These cows were exposed to bulls as one group (while in a thermo-neutral environment) and one week later exposed to the environmental treatments listed below in Table 1.

Table 1. Effects of Imposed Heat Stress on Reproduction in Beef Cows
([Biggers, 1986; OSU](#))

Treatment group	Control	Moderate Stress	Severe Stress
Daytime temp (F)	71	97	98
Nighttime temp (F)	71	91	91
Relative Humidity %	25	27	40
Rectal temp (F)	102.0	102.7	103.6
Pregnancy %	83	64	50
Conceptus Weight (g)	0.158	0.111	0.073

They found that heat stress of beef cows from day 8 through 16 affected the weights of the conceptus (embryo, fluids, and membranes) and the increased body temperature may have formed an unfavorable environment for embryo survival. As noted in table 1, the percentage of pregnancies maintained throughout the week of severe heat stress was considerably reduced.

Florida scientists studying dairy cows reported that for high conception rates the temperature at insemination and the day after insemination was critical to success. They stated that the optimal temperature range was between 50 degrees F. and 73 degrees F. Declines in conception occurred when temperatures rose above this range.

Extremely hot days and warm nights in the Southern Plains will cause core body temperatures of range cows to elevate. This data suggests that producers should make every effort to establish their breeding seasons when the temperatures are more in a thermal neutral range. Also remember that bull fertility is affected by heat stress. Heat stress causes a percentage decrease in pregnancy percentages. It is not an “all or nothing” situation. Fall calving (with breeding seasons beginning in late November and ending in January) allow for fertilization and early embryonic survival when heat stress is not a factor.

U.S. cattle inventory reaches a plateau

Derrell S. Peel, Oklahoma State University Extension Livestock Marketing Specialist

The July Cattle report shows that the inventory of all cattle and calves in the U.S. was unchanged year over year at 103 million head as of July 1. The inventory of beef cows was likewise unchanged at 32.4 million head while the dairy cow inventory was 9.3 million, down 1.1 percent year over year. Beef replacement heifers was down 4.3 percent at 4.4 million head and dairy replacement heifers were down 2.4 percent to 4.1 million head compared to one year ago. The inventory of bulls was unchanged year over year at 2.1 million head.

The July 1 inventory of steers over 500 pounds was 14.7 million head, up 1.4 percent year over year. The inventory of other (not for replacement) heifers over 500 pounds was 7.9 million head, up 5.3 percent from one year ago. Total steer and heifer calves under 500 pounds was 28.1 million head, down 0.7 percent year over year. With an estimated total July 1 feedlot inventory of 13.6 million head, these inventory estimates lead to an estimated feeder supply outside of feedlots of 37.1 million head, up slightly by 0.3 percent compared to last year. The inventory report was well anticipated and contained no surprises.

These inventory totals suggest that the U.S. cattle herd has reached a plateau. I contrast a plateau with a more typical cyclical peak inventory that historically has implied a liquidation phase to follow. The current inventory levels do not suggest a need for, or an inevitable, liquidation in cattle inventories at this time. Stable cow numbers and calf crop suggest that beef production will show little or no growth going into 2020. Current beef production levels and cattle prices are sustainable until something changes to provoke a new direction in cattle inventories.

Such changes could come sooner or later and could be positive or negative. If both domestic and international demand for U.S. beef continues at current levels, there will be little or no pressure on cattle markets. If something should happen to weaken beef demand in the U.S. or in global

markets, lower beef and cattle prices could result in some liquidation of cattle inventories. Impressive beef demand since 2017 is showing some signs of weakness that should be closely monitored going forward. Conversely, new growth in demand, most likely to occur if the myriad of trade disputes and issues in which the U.S. is currently embroiled are resolved, could provoke additional herd expansion and new growth in beef and cattle markets at some point.

The U.S. cattle and beef industry may be in the most stable situation that I can ever remember. This is pretty remarkable given the continued turbulence in external market conditions. Numerous factors that could destabilize cattle markets should be monitored including; corn prices and feed market conditions; the impacts of African Swine Fever on global protein markets; U.S. macroeconomic conditions; and exchange rates among others. Additionally, progress or lack thereof on current trade politics or new trade issues that could arise will have a large impact, positive or negative, on the overall climate for beef and cattle markets.

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