

## Cool Heifers Keep Regular Cycle

Transferring heifers from cold to hot climates just before the breeding season could delay the time to conception, and feeding barren heifers cost the producer extra dollars

Cessation of the estrous cycle and other marked physiological changes in cattle may result from the sudden exposure to high temperatures. However, cattle can adapt to the higher temperatures given time and the proper diet

The effects of heat stress were studied by ARS cattle scientists James Bond and Robert E. McDowell, Beltsville, Md. Both summer- and winter-conditioned heifers were used in four winter and two summer trials

Cattle maintained outdoors during the summer or winter were subjected to 90 degrees F. temperatures in climatically controlled chambers. Control cattle were kept in conventional barns

The heifers received a pelleted high-energy, low-fiber diet and water in trials lasting from 56 to 200 days. They were allowed to consume as much as they wanted. Weekly measurements were made of hair coat depth and weight, and daily checks were made for estrus

Only one summer-conditioned female out of six ceased normal estrous cycling, but 18 winter-conditioned females ceased cycling for periods of 56 to 112 days. Estrous cycle appeared related to the degree of stress—the difference between winter and high summer temperatures. To further test this relation-

ship, six summer-conditioned heifers were placed in the chambers during August the following year and were subjected to temperatures of 100 degrees F. Initially, their body temperatures rose, then declined slightly, and leveled off. During the 6-week period, all but one of six heifers ceased to cycle.

Though winter-conditioned heifers ceased cycling for various periods of time, they conceived and bore normal calves once regular cycling began.

Other changes in heat-stressed heifers included an average increase of 52 respirations per minute, an average temperature increase of 1.8 degrees F., and a 13-quart increase in water intake over conventionally housed heifers.

The most dramatic physical response to heat stress was shedding and decreased hair coat

depth in winter-conditioned females. In summer-conditioned females there was no distinct hair loss. Hair coat depth seemed to be most closely associated with adaptation of the heifers to constant heat stress.

The scientists found that feeding the high-energy, low-fiber diets and giving the heifers plenty of water helped them adapt to the higher temperatures. The high-energy, low-fiber feeding regime should be kept in mind by producers moving cattle from low to high temperatures, because high-fiber diets produce more body heat during digestion.

Dr. Bond says that prior climatic conditioning is important in the heifer's response to heat. If possible, it is best to buy cattle in one's own climate region. This is especially important during the breeding season.

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