

DETERMINING BEST PREDICTORS OF ANIMAL PERFORMANCE IN FEEDLOT STEERS

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ABSTRACT

Two studies were performed in a feedlot environment to determine the long-term effects of heat events on animal performance. The first study followed 26 crossbred Angus steers during a central Missouri summer in 2011 (July 12 through August 22), and was strictly aimed at predicting core temperature (T_{core}) and feed intake (FI) using ambient information. Mean daytime black globe (BG) temperature in the shade and ambient temperature (T_a) were the best predictors of T_{core} , (quadratic $R^2 = 0.68$ and 0.67 , respectively; $p < 0.0001$) with one hour of delay. Mean daytime BG temperature in the sun, in combination with the temperature humidity index (THI) was the best predictor of FI five days in the future (quadratic $R^2 = 0.30$, $p = 0.0044$). The second study took place in the same location over 100 days during the summer of 2013 (June 4 through September 11). Half of the steers were randomly selected as treatment (TRT) animals, and their winter hair coat was removed from their topline and heart girths. Compared to the control, the TRT animals had significantly lower T_{core} (0.30°C ; $p < 0.0001$), with no effect on respiration rate ($p > 0.10$). The best predictor for herd T_{core} was T_a with two to three hours of lag (quadratic $R^2 = 0.52$, $p < 0.0001$). Finally, the best predictor of whole-herd FI was mean daytime THI calculated using sunlit BG temperature, with a 2-d lag (quadratic $R^2 = 0.25$, $p < 0.0001$).