

# Effect of housing type on health of preweaned dairy calves during summer in Florida

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## Introduction

A common housing system for dairy calves used in warm humid environments is a wire-framed hutch with a piece of plywood on top to provide shade. Also available to dairy producers is an alternative hutch design for the prevention of heat stress (CalfTel®, L. T. Hampel Corp, Germantown, WI). The objective of this study was to evaluate the effect of housing type on the health of preweaned dairy calves.

## Materials and Methods

Holsteins and Holstein-Jersey cross calves (n = 96) were randomly assigned to a CalfTel® polyethylene hutch exposed to direct sunlight (Holstein, 24; Holstein-Jersey cross, 24) or a wire hutch with a plywood shade located under trees (Holstein, 22; Holstein-Jersey cross, 26). Rectal temperature, respiratory rate (RR), and health score were obtained for each three times a week at 0900 and 1500 hours. Rectal temperature was measured using a rectal thermometer. Respiratory rate was determined by counting the movements of the abdominal muscles in the flanks during respiration. Health scores were determined in accordance with a calf health scoring chart developed by Dr. Sheila McGuirk from the University of Wisconsin. Repeated measures analyses were used to compare rectal temperature, respiratory rate, health score, and weaning weight between treatment groups.

## Results

At 0900 hours, mean  $\pm$  SD rectal temperature did not differ between calves housed in the CalfTel® hutch ( $39.1 \pm 0.22^\circ\text{C}$ ) and those housed in the wire hutches ( $38.8 \pm 0.29^\circ\text{C}$ ); However, at 1500 hours, calves in the wire hutches had a significantly ( $P < 0.05$ ) lower mean rectal temperature ( $39.1 \pm 0.22^\circ\text{C}$ ), compared with that ( $40.1 \pm 0.28^\circ\text{C}$ ) for calves in the CalfTel® hutches. Throughout the experiment calves in CalfTel® hutches

had a higher mean RR, compared with the mean RR of calves in the wire hutches. A hutch by time interaction, ( $P < 0.05$ ) was found; RRs were similar for calves reared in both types of hutches at 0900 hours, but at 1500 h, the mean RR (90 breaths/min) for calves in the CalfTel® hutches was significantly higher than the mean RR (60 breaths/min) for calves in the wire hutches. Mean weaning weight ( $145.49 \pm 3.3$  lb or  $66.13 \pm 1.5$  kg) for calves in the wire hutches did not differ from that ( $146.34 \pm 3.3$  lb or  $66.52 \pm 1.5$  kg) for calves in the CalfTel® hutches. Furthermore weaning weight was not affected by breed ( $P = 0.61$ ). Mean weaning weight for Holstein calves in CalfTel® hutches was  $144.19 \pm 3.5$  lb ( $65.54 \pm 1.6$  kg), compared with  $145.51 \pm 3.7$  lb ( $66.14 \pm 1.7$  kg) for Holstein calves in wire hutches; and mean weaning weights for Holstein-Jersey cross calves in CalfTel® hutches was  $146.81 \pm 3.3$  lb ( $66.73 \pm 1.5$  kg), compared with  $147.18 \pm 3.5$  lb ( $66.90 \pm 1.6$  kg) for Holstein-Jersey cross calves in wire hutches. Morbidity rates differed between calves housed in the CalfTel® hutches and calves housed in the wire hutches. Compared with calves housed in the CalfTel® hutches, calves housed in the wire hutches were at 2.8 and 2.4 greater odds of developing a nasal discharge and cough, respectively. Calves in the wire hutches were also more likely (OR, 5.47; 95% confidence interval, 2.26 to 13.20) to receive veterinary treatment than were calves in the CalfTel® hutches.

## Significance

Weaning weight and health of calves reared in CalfTel® hutches was not affected, despite experiencing higher mean rectal temperatures and respiratory rates at the 1500-hour time point. Thus, heat stress (as evidenced by increased rectal temperature and RR) did not affect the health of calves in the CalfTel® hutches. The lack of difference in weight gains and fewer health issues by calves in the CalfTel® hutches suggests that the calves adapted well to the housing environment. Further research is required to determine the value above which THI affects calf health.