

# Temperature preferences and feed level of newborn dairy calf

Borderas, T.F.<sup>1,2,3</sup>, A.M.B de Passillé<sup>1,3</sup>, and J. Rushen<sup>1,3</sup>

<sup>1</sup>Pacific Agri-Food Research Centre, Agassiz, BC, Canada

<sup>2</sup>DPAA. Universidad Autonoma Metropolitana – Xochimilco, Mexico

<sup>3</sup>Animal Welfare Program. Land and Food Science. University of British Columbia



## Introduction:

Calves born in winter are exposed to cold ambient temperatures after separation from their dam.

Cold temperatures have been associated with increased mortality, increased protein degradation, impaired absorption of IG from colostrum and increased pneumonic lesions.

## Material and Methods:

-Twenty seven newborn Holstein calves (BW=43.07±1.11 kg) were housed for their first 3 d of life in large individual pens (3.8 x 2 m) with 2 heat lamps (250 W) at one end (Picture 1). Temperature gradient in the pen was recorded with a black globe thermometer (Fig 1).

-Calves were assigned to either HIGH (30%BW) or LOW (8% BW; common commercial practice in North America) milk allowances (served twice a day) balancing for sex, birth weight and coat color (black, white, mixed).

-Temperature loggers (TL) were placed around the barn to measure environmental temperature (BARNTMP).

-Temperature loggers were placed in a black cotton bag on the back of each calf (Picture 2) to record microclimate in the areas chosen by the calf (CALFTEMP)

-Position in the pen and posture of each calf was recorded with video cameras for the entire 3 d trial. Day was divided in four 6 h periods (morning, afternoon, evening and night)

-A mixed model that included position of the calf, milk allowance, day, period of the day, and interactions was used to analyse the data.

## Results:

**Figure 2.** Calves show a marked preference for the zone under the heat lamps independently of feed level

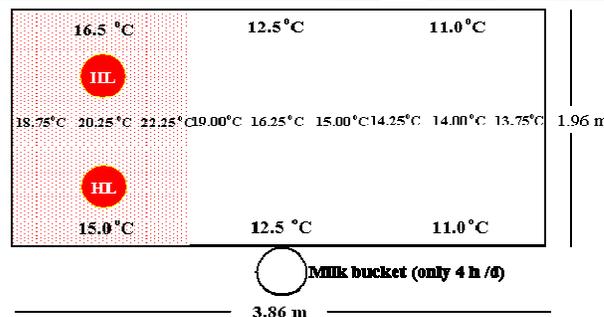
**Figure 3.** Calves spend more time under the heat lamps as they grow older

Calves were more often under the heat lamps, when the difference between the barn and the calf temperatures was greatest (  $r=0.46$  , $P<0.001$  )

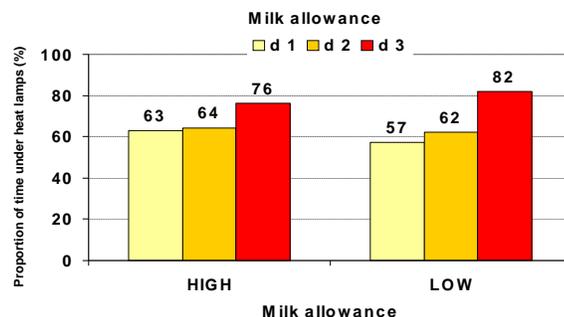
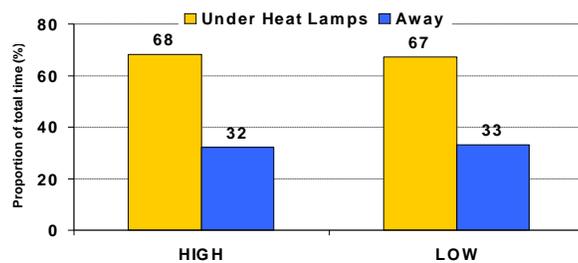
## Questions:

Do newborn calves show preference for a warmer microclimate?

Does feed level affects this preference?



**Figure 1.** Pen layout and black globe temperature measurements



## Conclusions:

Calves showed a strong preference for the warmer zone under the heat lamps.

This preference increased as the calves aged and was not affected by the amount of milk fed or the temperature in the barn.

Temperature loggers on calf may be useful to look at animal preference for microclimate.

Our results support suggestions that the use of heat lamps during the first days of life can increase calf comfort.