



Can calves be potty trained?

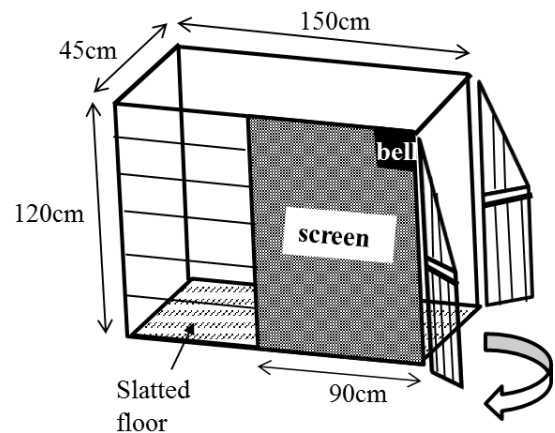
As anyone who has worked with cattle knows, cows produce a huge volume of urine and feces each day. All that manure quickly adds up, increasing the risk of slips and falls, mastitis and lameness. Accumulation of manure is also costly in terms of both bedding and labour costs.

Consequently, dairy barns are typically designed to limit cows' contact with their manure. However, current attempts to handle manure often rely on barn designs which restrict or inhibit expression of cows' natural behaviour and may compromise cow welfare. Training cattle to urinate and defecate in specific areas of the barn has the potential to revolutionise the way we house cattle; allowing barns to be designed around cow comfort rather than around removal of manure whilst improving cleanliness and cutting bedding costs.

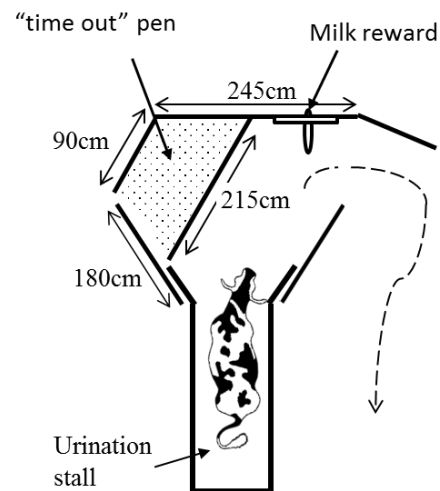
Cattle are generally assumed to have little or no control over urination and defecation. Thus, the first step towards toilet training cattle at our research facility was to test if cattle can learn to associate a cue (e.g. a command or location) with urination or defecation. Typically toilet training begins with young animals. We therefore conducted an experiment to see if calves could be trained to urinate in a specific place.

We chose to focus on urination training because multiple urinations can be rapidly and reliably induced in a short space of time using a single IV injection of a diuretic (Salix). This allowed us multiple opportunities within each training session to reward urinations in the correct place.

Six, 1 month old female Holstein calves were brought individually to an experimental pen, placed in a stall (where we wanted them to urinate) and given the diuretic (Figure 1a). As soon as the calves urinated (typically within 7 minutes of entering the stall) a buzzer sounded and calves were released from the stall to receive a milk reward (approx. 20 ml) via a teat.



1 a) Urination stall



1 b) Set up of experimental pen

Figure 1 – Dimensions of a) the urination stall and b) the experimental pen.

After consuming their milk reward calves were returned to the urination stall by the handler for two more urinations in the stall followed by milk reward.

The following day was a test day. Calves were placed in the stall without receiving the diuretic. If calves urinated within 15 minutes they were released to drink their milk reward before returning to their home pen. The following day was another test day. Calves failing to urinate in the allotted time were given a 5 minute "time-out" (released from stall into a small "time-out" pen without milk, Figure 1b) before returning to their home pen. The following day was a training day. Thereafter, the experiment continued in this manner for a total of 17 days with each successful test day followed by an additional test day and each unsuccessful test day followed by a training day.

To make sure calves were not simply urinating because they were excited or scared, each trained calf was assigned a control calf. Control calves were brought to the same experimental pen and placed in the same stall in between trained calves. Control calves were never given a diuretic but were held in the stall for the same amount of time and received the same milk reward or "time-out" as their matched treatment calf.

Training was successful; trained calves urinated more often in the stall on test days than their control calves (Figure 2).

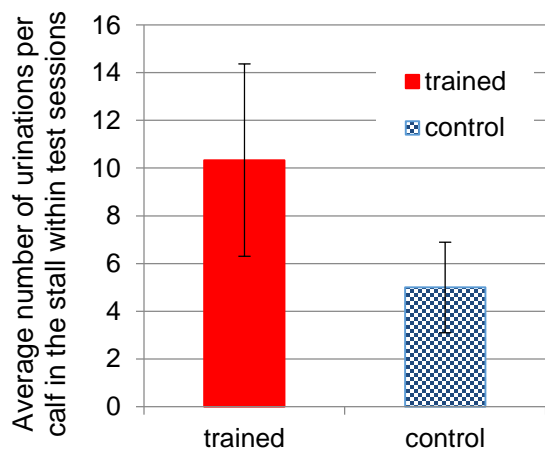


Figure 2. Mean number of urinations in the stall per calf, per test session

Speed of learning varied; only one of the six trained calves failed to urinate more than her control, whereas one calf required just a single 15 minute training session, urinating every time she was placed in the stall for the following 16 test days .



Click this link to watch a video of one of our toilet trained calves:
https://youtu.be/yDqvl_7_GeM

This study is the first to show that cattle can be trained to urinate in a specific place and demonstrates that calves have both the cognitive ability and physiological control required for toilet training.

Obviously we don't expect producers to train each and every one of the calves and cows on their farm manually! Currently we are working with UBC's Department of Physics to develop a fully automated system for detecting and rewarding urinations and defecations in specific areas of calves home pens. Stay tuned for the next research report!

The UBC Dairy Education and Research Centre is pleased to invite you to our annual **Open House, Saturday July 25, 9am – 4pm**. Meet students and researchers and learn more about our renowned research and education programs in animal welfare, animal reproduction and resource recovery. 6947 Loughheed Hwy, Agassiz, BC.