



# Recent advances in animal welfare science V

## UFAW Animal Welfare Conference

York Merchant Adventurers' Hall UK, 23rd June 2016

### INFLUENCE OF MILKING PARLOUR SIZE ON BEHAVIOUR OF DAIRY COWS

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Between 1993 and 2013, mean body size of cows increased due to breeding selection for higher milk yield by 5cm and 11cm for Brown Swiss and Holstein, respectively. However, the size of the milking parlours has not been adjusted so far. Therefore, the available milking stall space per cow is reduced and could negatively influence animal well-being during milking.

Our goal was to investigate the influence of different space allowances in milking parlours on the behaviour of dairy cows.

On 15 Swiss farms, we collected data on parlour and cow size by measurements. Additionally, we randomly selected 10 cows per farm and observed the behaviour of these cows during milking (hind- leg activity, maximum peaks of hind- leg accelerations, elimination, rumination and latency to entering the milking stall). We calculated a so-called space ratio length ( $SR_{length}$ ) by dividing milking stall length by cow length and a space ratio width ( $SR_{width}$ ) by dividing milking stall width by cow width. A space ratio  $>1$  means that cow lengths or widths are smaller than milking- stall length or width. We analysed the effect of these two space ratios on behaviour using linear mixed-effects models.

Due to a significant correlation between  $SR_{length}$  and  $SR_{width}$ , only  $SR_{length}$  was used for the final models. With increasing  $SR_{length}$ , more cows tended to ruminate during milking ( $\chi^2_1 = 3.253$ ;  $P = 0.071$ ). The statistical analyses indicated neither a significant effect of  $SR_{length}$  on hind- leg activity, nor on maximum peaks of hind- leg accelerations, nor on latency to entering milking stall (activity:  $F_{1,62} = 0.735$ ;  $P = 0.395$ ; accelerations:  $F_{1,92} = 1.210$ ;  $P = 0.274$ ; latency:  $F_{1,130} = 0.382$ ;  $P = 0.538$ ). Due to the rare occurrence of elimination, with no events recorded for Tandem, three for Herringbone and nine for Side-by-Side milking parlours, no analysis was conducted.

A significant effect of milking parlour could be detected only for the latency to entering the milking stall with longest latency in Side-by-Side parlours and shortest in Tandem parlours ( $F_{2,17} = 8.544$ ;  $P = 0.003$ ).

These findings demonstrate that cow comfort can to some extent be negatively affected by improper milking- stall dimensions changing cow behaviour. They highlight the importance of further investigations on behavioural effects due to improper milking- stall dimensions, in particular their lengths, relative to the size of cows for improvement of good milking performance and an economically beneficial milking routine. Furthermore, the results show that parlour type can affect cow behaviour, but future research is necessary to identify the factors leading to this parlour type effect.