

## **Influence of milking-parlour size on the behaviour of dairy cows**

***Yamenah Gómez<sup>1,2</sup>, Melissa Terranova<sup>1,2</sup>, Michael Zähler<sup>1</sup>, Edna Hillmann<sup>2</sup>, Pascal Savary<sup>1</sup>***

*Agroscope Institute for Sustainability Sciences ISS, Work, Building and System Assessment Research Group, CH-8356 Ettenhausen. <sup>2</sup>ETH Zurich, Department of Environmental System Sciences, Ethology and Animal Welfare Unit and Animal Nutrition, CH-8092 Zurich; yamenah.gomez@agroscope.admin.ch*

Over a period of ten years, breeding selection for higher milk yield has caused Brown Swiss and Holstein dairy cows to increase in size by 5cm and 11cm, respectively. Despite this, milking-parlour size has not yet been adjusted in Europe. As a result, milking-stall space per cow may be too small, which could have a negative impact on animal welfare during milking.

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

On 15 Swiss farms, we measured parlour and cow size and randomly selected 10 cows per farm for behavioural observation during milking (time taken to enter the milking parlour, hind-leg activity, excretion and rumination). Individual space ratios were calculated for each cow by dividing milking-stall length by cow length and stall width by cow width. Space ratios > 1 indicate that cow length or width was less than stall length or width. We analysed space-ratio effects on behaviour using generalised linear mixed models.

With an increasing space ratio ( $\geq 1.2$ ), cows exhibited significantly less hind-leg activity and excretion, and more rumination events (both  $p < 0.02$ ), and took less time to enter milking parlours ( $p < 0.1$ ).

Based on these results, proper minimum requirements for milking-stall dimensions should be 1.2 times the cow size. In our study, the averaged ratio of 1.1 for group milking parlours did not meet these requirements. Adjustments based on our results could lead to an improvement in cow welfare during milking.