Influence of the Quarter-Individual Milking System "MultiLactor" on Milk Yield and Quality in Dairy Cows: Results of a Field Study

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Background

- Milking is an important part of dairy farming to optimize milk production and quality.
- If the milking machine settings and liner design are not suitable for all dairy cows on the farm, the teat condition will deteriorate and some animals may suffer from mastitis.
- For these reasons, the MultiLactor (ML) milking system was developed by Siliconform in Germany to accommodate all udders and teats of dairy cows.

Goal

The aim of this study was therefore to examine the influence of the quarter-individual milking system MultiLactor on the milk yield and composition.

Material and Methods
Location

The experiment was carried out on a commercial dairy farm in the canton of Lucerne in Switzerland.

Animals and Housing

170 Holstein Friesian dairy cows were used for this purpose (Fig.1).

The cows were kept in a loose housing system and they were fed ad libitum with a partial mixed ration (grass- and corn-silage, hay) and received concentrate according to the production level. Sandboxes were used as resting places for the cows.

Fig.1: Herd of the examined dairy farm

Milking Equipment and Milking Routine

All dairy cows were milked three times a day in a carousel milking parlor (24 places) with MultiLactor milking technology. ML is based on a quarter-individual milking system (Fig. 2). The working vacuum level was 36 kPa and sequential pulsation (25% offset quarter to quarter) was adopted. The pulsation rate was 60 cycles per minute and the pulsation ratio was 60/40 during the milking time.

At the end of the milking process, the teat cups were automatically removed and the teats were dipped. In addition, the milking machine was cleaned and disinfected after each milking cow.

Fig. 2: MultiLactor in the rotary milking parlor during milking process

Milk Recording, Sampling and Analysis

Daily milk yield was recorded and milk samples were taken monthly from each cow on the farm during the study period.

The milk samples were analyzed by the Swiss Milk Recording Association for fat, protein, lactose, urea and Somatic Cell Count (SCC).

Highlights

- After milking with the MultiLactor very little residual milk remained in the udder.

- Udders remained healthy throughout the study period, therefore somatic cell counts remained low.

- High milk yield and better milk quality can be achieved by using MultiLactor milking system, as it is adapted to the physiology of the dairy cows.

Results

Tab. 1: The average (LSM±SE) milk parameters of the examined farm in the investigation period

Parameters	LSM±SE
Milk yield kg/day	35.84± 0.28
Fat %	4.36±0.02
Protein %	3.28±0.01
Lactose %	4.75±0.01
Urea mg/dl	20.65±0.20
SCC x10^3 cells/ml	99.63±6.48
Lactation number	3.31±0.04

Tab. 2: Average (LSM) milk parameters of the examined farm according to the stage of lactation

Milk Parameters	Stage of Lactation		
	(<100 days)	(100-200 days)	(>200 days)
Milk yield kg/day	41.62a	36.97b	29.66c
Fat %	4.23a	4.28a	4.56b
Protein %	3.01a	3.29b	3.51c
Lactose %	4.80a	4.76b	4.68c
Urea mg/dl	18.72a	21.01b	22.14c
SCC x10^3 cells/ml	82.49a	107.55a	108.86a

[a, b, c] Means with different letters differ significantly between lactation stages ($p<0.05$)
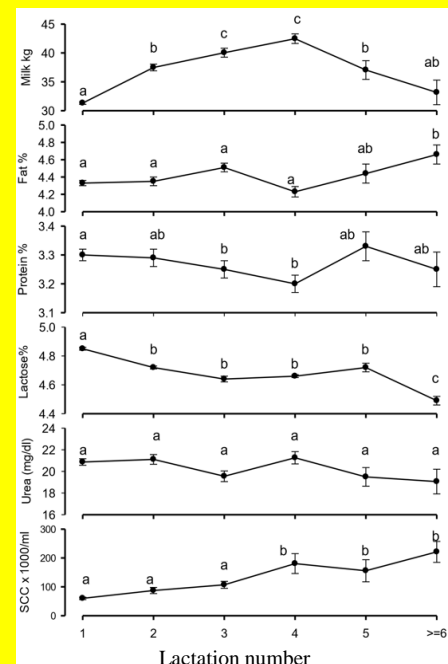

Fig. 3: Average (LSM±SE) milk parameters of the dairy farm according to lactation numbers

[a, b, c] Means with different letters differ significantly between lactation number ($p<0.05$)
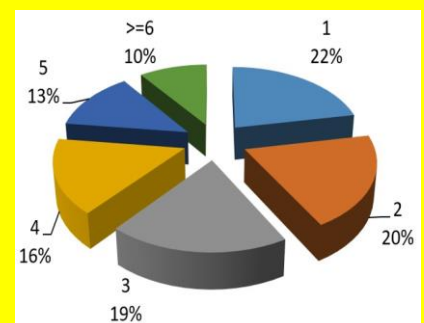

Fig. 4: Herd structure in the dairy farm according to lactation number (1 to >=6) during investigation period