56th Annual Meeting of the European Association of Animal Production 5. – 8. June 2005, Uppsala, Sweden

M6.9

ktoelle@tierzucht.uni-kiel.de

Christian-Albrechts-University of Kiel
Faculty of Agricultural and Nutritional Sciences
Institute of Animal Breeding and Husbandry

Milk flow and udder health in dairy cows

K.-H. Tölle[1], U. Tölle[2] and J. Krieter[1]

Aim:

Investigation was performed to analyse influence of milk flow subject to somatic cell count in milk. Different milk flow parameters measured in large-scale milk recording in Schleswig-Holstein were examined.

Material and Methods:

Milk flow parameters (LactoCorder®) and somatic cell counts from 352,521 milkings of 24,900 German Holstein dairy cattle were recorded between January 2002 and Mai 2004. Data set was randomly divided into 10 independent subsets. Mixed model for somatic cell score (SCS) was performed with fixed effects: stage of lactation (6 classes), number of lactation (6 classes), test-day within herd (912 to 1028 classes), alternatively the milk flow parameters average milk flow (6 classes), maximum milk flow (6 classes), duration of milking (6 classes), bi-modality (yes/no), additionally the covariable milk yield and the random effect cow.

Results:

n = 352,521 milkings		$\bar{x}$	s
milk yield	(kg)	12.8	4.48
maximum milk flow	(kg/min)	3.2	1.07
duration of milking	(min)	6.7	2.30
somatic cell score	(score)	2.7	1.87

Means ($\bar{x}$) and standard deviations (s) of milking parameters

⇒ Results from 10 data subsets were almost identical.

⇒ Repeatability of SCS referred to repeated values of **cows** was ~44% (range in subsets: 41.6% to 46.7%).

⇒ With increasing ***milk yield*** the SCS decreased (b = ~ -0.12 (range in subsets: -0.105 to -0.129)).

⇒ With progression of ***lactation stage*** SCS was significantly higher.

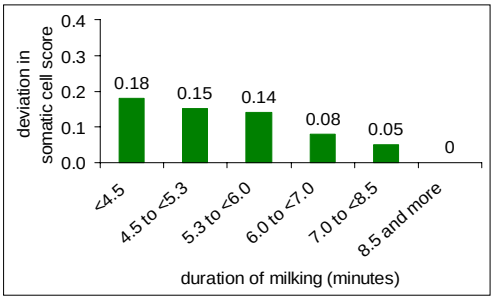
⇒ SCS increased from ~2.2 in first **lactation** up to ~3.8 in lactations >5.

⇒ 29.2% of all milk flow curves were bi-modal. No significant influence of ***bi-modality*** on udder health was found.

⇒ Influence of **average milk flow** on SCS was low (near significance limit of p = 5%). A tendency to rising SCS with increasing average milk flow, in particular in the highest milk flow class (>2.6 kg/min), was apparent.

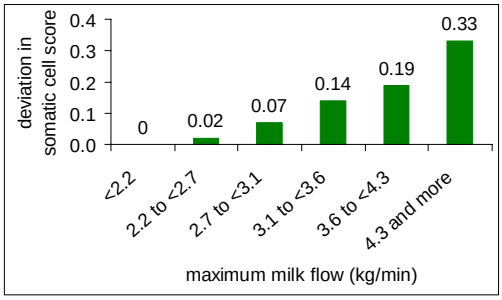
LactoCorder® for measuring milk flow parameters

⇒ **Duration of milking** had a highly significant influence on SCS; with increasing duration, SCS was moderately reduced. Differences between lowest and highest duration ranged from 0.09 to 0.23 for the data subsets



Somatic cell score subject to milking duration (exemplary one data subset)

⇒ **Maximum milk flow** had a highly significant influence on SCS. With rising maximum milk flow, SCS increased. Differences between lowest and highest maximum milk flow class ranged from 0.18 to 0.35 for the data subsets.



Somatic cell score subject to maximum milk flow (exemplary one data subset)

Conclusions:

✓ Low duration in milking and high maximum milk flow led to an increase of SCS.

✓ Bi-modality had no influence on SCS.

✓ Milk yield, lactation number and stage of lactation were the most important effects on SCS.

[1] Institute of Animal Breeding and Husbandry
Olshausenstraße 40, 24098 Kiel
Contact:
Dr. Karl-Heinz Tölle
Phone: +49 431 880-2550
Fax: +49 431 880-2588
ktoelle@tierzucht.uni-kiel.de
www.tierzucht.uni-kiel.de

[2] Landeskontrollverband Schleswig-Holstein e.V.
Steenbeker Weg 151
24106 Kiel, Germany