Session 41

Milk flow kinetic during two consecutive months of lactation in ewes

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Introduction

- To improve the milkability and milk production of ewes in Slovakia it is necessary to increase the knowledge on physiological response to machine milking.
- Some useful parameters to evaluate milkability can be obtained by the measurement of the kinetic of milk flow rate (Bruckmaier et al., 1997, J. Dairy Res., 64: 163-172) Milk flow kinetic is related to milk production (Rovai et al., 2002, Anim. Sci. 80, Suppl 1: 5) and especially in non well genetically selected breeds, it can indicate the occurrence of milk ejection reflex, which is crucial for complete milk removal and thus for milk production.

Aim

to compare the milkability and the milk flow type stability in two consecutive months June and July by breeds Tsigai, Improved Valachian and Lacaune.

Material and methods

Animals

- Tsigai (TS, n = 8)
- Improved Valachian (IV, n = 8)
- Lacaune (LC, n = 8)

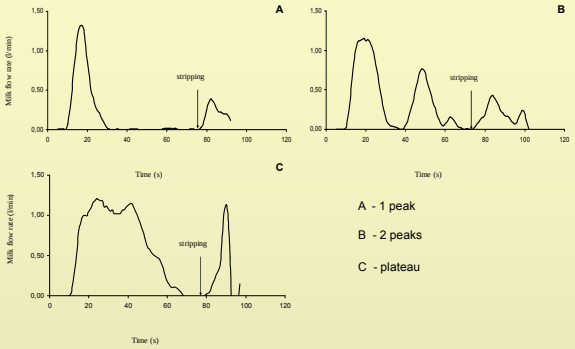
Recording of milk flow

- The ewes were milked twice daily at 8:00 a.m. and 8:00 p.m. in a 1x24 low – line milking parlour with 12 milking units.
- Milking machine was set up to provide 150 pulsations per minute in a 50 : 50 ratio with a vacuum level of 38 kPa.
- Milking was performed without any udder preparation.
- Milk flow data were recorded during three consecutive evening and morning milkings in the middle of June and July.
- Milk flow was recorded individually for every ewe using four electronic jars collecting the full milk produced at milking (1.5 l).

Evaluation of milk flow curves

- was performed according to Bruckmaier et al. (1997, J. Dairy Res., 64: 163-172) and Rovai et al. (2002, Anim. Sci. 80, Suppl 1: 5) into four types
  - 1 peak (1P) represents milk flow curves with one peak of milk flow before stripping (only cisternal fraction is obtained)
  - 2 peaks (2P) has two clearly separated milk flow peaks (first peak – cisternal and second peak – alveolar fraction), i.e. transient decreasing followed by increasing milk flow, before stripping was performed
  - plateau (PL) represents milk flow by ewes with larger emission curves and maximal milk flow rate > 0.4 l/min without clear differences between peaks 1 and 2

Figure 1. Examples of milk flow patterns during machine milking of TS, IV, LC.



Results

Figure 2. Distribution of ewes with stabile milk flow patterns in June and July

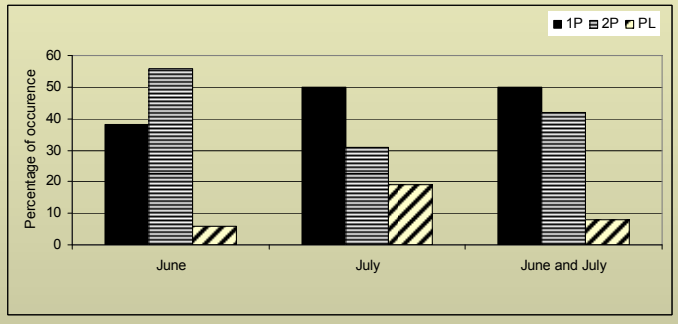


Table 1. Effect of milk flow types on milkability of ewes

	Milk flow curve type		
	1P	2P	PL
Trait	N=113	N=127	N=45
Total milk yield (TMY), (l)	0.415 ± 0.025^{a}	0.457 ± 0.025^{b}	0.463 ± 0.028^{ab}
Machine milk yield (l)	0.302 ± 0.023^{a}	0.360 ± 0.023^{b}	0.353 ± 0.026^{b}
Stripped milk yield (SMY), (l)	0.112 ± 0.011	0.096 ± 0.010	0.114 ± 0.013
SMY/TMY (%)	29.1 ± 2.07^{a}	21.5 ± 1.96^{b}	23.5 ± 2.52^{ab}
Machine milking time (s)	38 ± 2^{a}	68 ± 2^{b}	55 ± 3^{c}
Latency time (s)	11 ± 1	12 ± 1	12 ± 1
Peak flow (l/min)	1.004 ± 0.077	0.953 ± 0.075	0.919 ± 0.085
Milk yield in 30 s, (l)	0.218 ± 0.016	0.202 ± 0.015	0.218 ± 0.018
Milk yield in 60 s, (l)	0.289 ± 0.022	0.325 ± 0.021	0.359 ± 0.025

$^{a, b,c}$ Averages in the same line with different letters are different at the level P ≤ 0,05.

Conclusion

- The same milk flow type was recorded in 50 % ewes in both months.
- Milk yield varied according to milk flow curve type.
- Within single months (i.e. June and July), 67 % ewes had the same type of milk flow curve.
- The ewes with 1P had the most stabile milk flow curves. However, it is supposed that in the ewes with this type of milk no milk ejection occurs during milking.

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