



## Feeding behaviour in dairy goats, a repeatable trait which can be measured automatically

Sylvie Giger-Reverdin, Christine Duvaux-Ponter, Nicolas N.C. Friggens

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### 1.03

#### **Feeding behaviour in dairy goats, a repeatable trait which can be measured automatically**

Sylvie Giger-Reverdin, Christine Duvaux-Ponter & Nicolas C Friggens

*UMR Modélisation Systémique Appliquée aux Ruminants, INRA, AgroParisTech, Université Paris-Saclay, 75005, Paris, France*

[sylvie.giger-reverdin@agroparistech.fr](mailto:sylvie.giger-reverdin@agroparistech.fr)

Feeding behaviour influences dry matter intake, but is highly variable between animals. It is a key factor to explain the inter-individual variation in the evolution of rumen pH, and therefore of occurrence of acidosis which differs from one animal to another, even when fed the same diet. Phenotyping feeding behaviour is thus of interest for quantifying some of the variation in digestive efficiency, and therefore in feed efficiency, especially in intensive systems with a high proportion of acidogenic ingredients in the diet.

The aim of this work was to look for repeatable and pertinent criteria to evaluate this trait. Feeding behaviour was assessed at three different periods (1st lactation, 2nd gestation + lactation, 2nd lactation) on thirty-five goats born at the same time. They were housed in individual crates with automatic measurement of the quantity of feed eaten every 2 min, and fed ad libitum a complete ration adapted to requirements. One third of the feed was delivered after the morning milking and two thirds after the afternoon milking according to the intervals between milkings. The evolution of feed intake during 15 hours after the afternoon allowance was measured on 3 or 4 days in each period. Two phenotypes were automatically measured and analysed: Q90 (quantity of diet consumed by 90 min post afternoon feed allowance), P90 (Q90/Total quantity of feed consumed after the afternoon feed allowance). In earlier work, these two parameters were highly linked with the occurrence of acidosis.

Intra-period individual repeatabilities were very high. The value for one period was highly correlated with that of a preceding one for the P90 criteria, but only tended to be correlated for the Q90 criteria. Given this repeatability, it is possible to characterise the feeding behaviour of a goat during its first lactation and, for example, to adjust the feeding of the animals with the lowest P90 or Q90 in the following lactations, in order to decrease the occurrence of acidosis in the herd.

These results on the variability of intake rate show that simple criteria could be found to phenotype goats on intake rate in precision livestock farming systems.

### 1.04

#### **Social Network Analysis and management of calves and dairy cows**

Paul Koene

*Animal Welfare, Wageningen Livestock Research, P.O. box 65, 8200 AB Lelystad, The Netherlands*

[paul.koene@wur.nl](mailto:paul.koene@wur.nl)

Social networks in animal species may indicate social stress and social support that are important for welfare. A recent finding shows that "Calves seem to form preferential relationships before 3.5 months of age. Keeping cattle together from an early age seems beneficial for them". We tried to confirm this statement using a Social Network approach and a group of 10 Holstein-Friesian calves (6 males/4 females) aged 3 to 4 months. Individual automated location registration (X-Y position) was used to calculate the nearest neighbour of each calf in the pen (4 x 11 meters). Based on the nearest neighbour matrix positive and negative associations were calculated using standardized residuals (MatMan). The residuals are used as input for social network analysis (SNA) of the positive and negative associations of the calves using Ucinet. Data were analysed per day excluding the dark period (21-06 hrs.), when calf activity was low. To challenge the calves and their relationships the feeding regime was changed from dried alfalfa (day 1-6) to wet silage (day 7-12). Comparison of day 6 and day 7 shows that the challenge changed daily habits and increased for instance daily walking from 298 to 418 meter per day (paired T-test, P0.05), indicating instability of the social network. We conclude that social networks might be important for the welfare management of calves and that automatic recording and follow-up management actions are feasible in the near future. More importantly, suggestions are made to use Social Network information in adult dairy cow management.

