86- EFFECTS OF THE MANAGEMENT SYSTEM ON THE MAIN MILK TRAITS AND CLOTTING ABILITY IN SHEEP FARMS IN THE LAZIO AND TUSCANY REGIONS

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Introduction

Traditional sheep breeds raised in Central Italy (Sarda, Massese, Comisana and Lacaune) are considered to be adapted to Mediterranean climatic conditions and grazing systems. Extensive and semi-extensive farming systems exert a positive influence on animal health, longevity and metabolism as well as on milk quality.

Objective This study aimed to evaluate how the production system (extensive, semi-extensive or intensive) affects the chemical, cytological and coagulation properties of bulk sheep's milk.

Materials and methods

A total of 215 bulk milk samples, were collected during 2024, from 17 farms located in central Italy (Lazio and Toscana regions). After collection, milk samples were maintained at 4°C and analyzed for milk quality traits at the Istituto Zooprofilattico Sperimentale Lazio and Toscana "*M. Aleandri*" laboratories. The main chemical milk composition (fat %, protein%, lactose% and freezing depression point (**FDP**) m°C) was performed through FTIR spectra method with the MilkoScan ™ 7 RM (Foss Electric, Hillerød, Denmark), while the somatic cell count (**SCC**) was performed through flow-cytometry method using the Fossomatic ™ 7 DC instrument (Foss Electric, Hillerød, Denmark). Milk Coagulation Properties (**MCP)** – rennet clotting time (**RCT**), curd-firming time (k20) and curd firmness (a30) – were measured at 30 and 60 minutes, using a Formagraph LDG 2.0 device (Ma.Pe System srl, Firenze, Italy), following the Zannoni and Annibaldi methods (10 mL of milk at 36 °C, followed by the addition of calf rennet (200 µL) – composed of 75% chymosin and 25% pepsin (175 international milk clotting units/mL diluted at 1.6%). For the statistical analysis, the farms were classified according to the farming system as follows: intensive (**In**), semi-extensive (**SE**) or extensive (**E**), depending on the availability of grazing access. The effects of the management system on the main milk quality traits and **MCP** were evaluated using one-way ANOVA ($p<0.05$) with Bonferroni adjustment. The results are presented as the mean ± SEM.

Results

Regarding milk quality traits, the mean values of fat, protein, lactose, **FDP** and solids non fat were 6.89±0.06%, 5.88±0.04%, 4.47±0.02%, - 561±0.9 m°C and 11.58±0.04%, respectively. The mean **SCC** was 1,099±47 cells/ml. Regarding **MCP**, 75.8% (163/215) of samples coagulated within 30 minutes, 19.5% (42/215) between 31 and 60 minutes, and only 4.7% (10/215) did not coagulate. In the present study **RCT** and k20 averaged 21.82±0.34 min and 2.94±0.16 min, while a30 averaged 32.12±1.08 mm.

When analysing the impact of farms management on milk quality traits, it was found that milk from farms **E** had a significantly higher fat content (7.35%) than milk from **In** and **SE** farms (6.94% and 6.68%, respectively). The SCC was significantly higher in farms **In** (1,323 cells/ml) than in **E** and **SE** farms (900 and 1,026 cells/ml, respectively).

The **MCP** was better in milk from **E** and **SE** farms than from **In** farms. In fact, the RCT time was less than 22 minutes for **E** and **SE** farms and more than 23 minutes for **In** farms. In contrast, the average a30 time was 33.8 mm longer for **E** and **SE** farms than for **In**, which was 27 mm.

Conclusions

fat composition, cytological values, and lactodinamographic characteristics.

Farms with an intensive production system showed worse SCC and MCP values. In contrast, farms with an extensive production system had a higher fat content in milk; although the composition of fatty acids and the

quality index of lipids have not yet been evaluated, this could be due to grazing as a substantial part of the diet. This nutritional information could add value to dairy products and differentiate them in terms of animal welfare as well.

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