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# STUDY ON THE LACTATION PERFORMANCE AND MILK COMPOSITION OF HUNGARIAN WORSTED MERINO AND TSIGAI SHEEP

József Csanádi\*, József Fenyvessy\*, András Jávör\*\*

\*University of Szeged Faculty of Food Engineering

\*\*University of Debrecen Centres of Agricultural Sciences

## SUMMARY

Five "Zombori" Tsigai ewes taken into the study. Sampling took place first only after the 30<sup>th</sup> day of lactation. The duration of the lactation was 165 days. The ewes were manually milked twice a day. The housing and feeding of the stock was based on grazing and extensive. The milk of the Tsigai stock had an average protein content of 5.54 %, while its average fat content was 6.87 %, which were less than those of the Merino. This is partly an outcome of the higher milk production.

*Key words: Tsigai ewes, Merino ewes, milk, milk composition*

## INTRODUCTION

In the last few years the , profitability of the sheep industry has decreased significantly, to which result among many factors contributed the fact, that dairy use, milk production is not typical in the domestic sheep farms, also, the meat and carcass quality of the Hungarian Worsted Merino is far lower than that of the other breeds distributed on the EU market (1999, A. JÁVOR, S. KUKOVICS, A. NÁBRÁDI; 2001, S. KUKOVICS, A. JÁVOR,)

Since it is possible to milk out a significant amount of milk by having produced two lambs annually, the yearly income of the sheep industry (branch) coming from the ewe's milk may achieve, furthermore, might exceed that of the mutton (1999, KUKOVICS and NAGY). In order to achieve this goal, however, dairy sheep breeds or dairy crossbreds are needed.

The milk production performance of the different breeds kept and bred in Hungary was studied by many scientists, researchers. as we have a shortage of space here, we report on and summarize only some literatural data.

Bedő, Nikodémusz and Gundel (1999) researching the lactation pattern and milk composition of Merino, Pleven and Pleven F1 (*first offspring generation*)

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x East Friesland, stated that the Merinos' milk had the highest values of useful ingredient - nutrient content, however, their daily milk yield was only approximately half of the Pleven F1 x East Friesland crossbreeds.

Kukovics and Nagy (1999) publish the milk production data of Awassi, Tsigai, Lacaune, Pleven, Merino, British Milkshoop and different crossbreeds. The Awassi produces the most milk, (300-336 litres). It is followed by the British Milkshoop (160-220 litres), the Tsigai (160-200 l) and then the milk production of Pleven F1 x East Friesland crossbreeds previously mentioned at Bedő. According to the announcements of the authors the Merino provides only 30-50 litres of milk during lactation.

Jávor (1994) publishes the milk production and composition data of Langhe F1, Sarde F1, East Friesland F1, Pleven F1 and Merino. The most milk was given by the East Friesland (87.06 litres), while the least was given by Merino ewes (49.5 l). The protein- and fat content was the highest in the milk of the Merino, at the same time the overall amount of fat and protein produced during the entire lactation was the smallest in the case of the Merino. The overall amount of fat and protein produced during the entire lactation was the largest in the case of the East Friesland.

In spite of the impressive amount of research and results so far, there was no significant change in the breed-composition of the domestic sheep farms. Beside the efficient forwarding, relay of the research results achieved, it seems, further data is necessary for convincing the shepherds about the necessity of breed change.

In order to achieve the outspread of dairy breeds, we wished to collect data for the establishment of the milk production database of Tsigai. We studied the lactation (milk production) and the ingredient values of milk using individual and bulk milk samples.

## **MATERIAL AND METHOD**

Study of milk production and ingredient values, calculations: daily milk production was assessed by adding up the amount milked in the morning and in the evening. The ingredient values of the individual samples were measured by MilkoScan 134 A/B device. The protein- and fat production values for the total duration of the lactation were created by extrapolating the average of the sampling points next to one another to the days inbetween the sampling points. **Housing conditions:** the five "Zombori" Tsigai ewes taken into the study were originating from the Makó-Rákos sheep farm of Mr János Dani. The housing and feeding of the stock was based on grazing and extensive. In order to ensure the undisturbed growth of the lambs, sampling took place first only after the

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30<sup>th</sup> day of lactation. The duration of the lactation was 165 days. The ewes were milked twice a day. The milking was done manually, following the thorough washing of the udders and the foremilk was done separately. The samples were examined within 3 hours following milking subsequently. We used the methods published in RAJKÓ, SZABÓ, (1995), RAJKÓ, SZABÓ (1996), SZABÓ (2001) for the planning of experiments and MS Excel software for evaluating.

**RESULTS AND DISCUSSIONS**

An increase in the sheep's milk production must be achieved by dairy breeds, because the genetic potential of these makes it possible unlike that of the meat or wool purpose breeds. Through the native Tsigai breed and the Hungarian Worsted Merino we are going to demonstrate the differences appearing in production. The data of the Merino originate from a scientific literature source.

The most milk was given by the Tsigai ewes for about a month, from the second half of April until the end of May. This period falls somewhere between the 45<sup>th</sup> and 60<sup>th</sup> day of lactation. Within this period the smallest amount (minimum) of daily milk was 0.6 litres, while the largest amount was 1.5 litres. The lower values may be related to the different genetic potentials and the younger age. The results of the fat content and protein content of the ewes' milk and the overall, total average results of milk production in the given period of lactation are shown in Table (1).

**Table (1). Average protein, fat content and milk production during lactation of Tsigai and Merino sheep**

Genotype	Protein content (3) %	Fat content (4) %	Milk production (5) litre/lact.
Merino (1)	6.59	7.11	49.51
Tsigai (2)	5.54	6.87	98.22

*Merino (1), Tsigai (2), Protein content (3), Fat content (4), Milk production (5)*

The protein content and fat content of the Merino is higher than that of the Tsigai. The protein content was by 1.01 % (per cent), the fat content was by 0.24 % higher than the same features of the Tsigai milk. As the relation between the milk production and the useful ingredient values of the milk is well-known, this

cannot be called a surprise. Beside the different genetic potential, capabilities, the much higher milk production does explain the lower values of the Tsigai milk.

In the studied, examined lactation the Tsigai ewes had given twice as much milk as the Merinos.

Since from sheep's milk primarily different cheeses are produced, the real question is: how much milk protein and fat can be produced by the Tsigai ewes. The summarized, total results of our examinations on this matter are shown in Table (2).

**Table (2): The protein- and fat production of Tsigai and Hungarian Worsted Merino during lactation**

	Protein production (3) kg	Fat production (4) kg
H. Merino (1)	3.26	3.52
Tsigai (1)	5.44	6.74
	the Tsigai breed produces <u>(x)</u> times more than the Merino(5)	
	1.6	1.9

*Merino (1), Tsigai (2), Protein production (3), Fat production (4), Production of Tsigai x times more than Worsted Merino (5)*

Our results confirm, that the main ingredient values of the Tsigai are lower than the same values of the Merino, although because of the much larger amount of milk milked during the entire lactation it produces more fat and more protein. Consequently, it is the amount of milk milked out that will determine the efficiency of the sheep farms both for the producers and the processors. More milk produced results in *higher* income for the producer, while the more processed ewes' milk ensures the production and selling of *more* cheese.

### CONCLUSIONS

When examining, studying the milk production of the Tsigai breed, which can be considered a *native* breed here in Hungary, we observed and stated that even with extensive feeding, Tsigai is able to provide roughly twice as much milk as the Hungarian Worsted Merino during one lactation. The amount of the

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approximately 100 litres of sheep's milk milked under extensive feeding can be increased by semi-intensive or intensive feeding, but the surplus costs should be optimised.

The milk of the Tsigai stock had an average protein content of 5.54 %, while its average fat content was 6.87 %, which were less than those of the Merino. This is partly an outcome of the higher milk production.

The amount of milk protein and fat produced during the entire lactation was larger in the case of the Tsigai breed, they produced 1.6 times more protein and 1.9 times more fat than the Merino ewes. This is closely related to the better daily milking ability and the little longer lactation period of the Tsigai ewes. The Tsigai ewes were milked for 165 days, while the Merinos are milked for an average of 100-150 days.

The results of our study and examinations show, that increasing the milk production can make the domestic sheep farms profitable. We do agree with the opinion of those experts, who declare that the quantitative improvement of milk production may be achieved in two ways. By increasing the number of ewes milked, or by higher individual production. In order to achieve the latter, it is reasonable to put genetically suitable breeds into production through crossing. Our results prove that Tsigai ("Zomborian variety") is perfectly suitable for this purpose.

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