



Influence of the Temperament Over The Milk-Yield of Goats of Bulgarian White Milk Breed and Its Cross-Breeds With Toggenburg and Anglo-Nubian Breed

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Summary

The present study had the aim to study the relation between milk productivity and the temperament of goats of Bulgarian White Milk breed and its cross-breeds with Toggenburg and Anglo-Nubian. The methodology was used after the model of Dimitrov et al. (2008) applied for sheep. From 53 goats examined, 35 were determined as having a nervous temperament (0 and 1 spot) and 18 with a calm temperament (2 and 3 spots). In relation to determining the influence of temperament of mother goats on their milk productivity, data from studbooks were used for the average milk-yield for lactation of each goat. In the present experiment we found that the emotional susceptibility of goats influenced their milk productivity. For animals with a calm temperament average milk-yield of 596 l was registered, which was 20 l more than in goats with a nervous temperament (576 l). Due to the small number of animals, we could not draw a well-grounded conclusion for the influence of temperament on the milk-yield for different ages in goats.

Key words: goats, behaviour, milk yield, temperament

Introduction

During The Last Decades Methods Have Been Intensively Developed For Study On Fear Susceptibility Toward The Human Being. It Is Considered That The Main Motive In Behaviour Of Animals In Their Contact With The Human Being Is The Fear, Which Motivates Them To Run Away From Him. The Animal Temperament Has An Influence Over The Milk Productivity, Because The Nervous Animals Could Be Stressed More Easily Than Calm Ones, And Stress Could Decrease Their Productivity.

Comparatively Few Studies, Both In The World And In Our Country, Observe The Temperament Influence Over Milk-Yield In Goats. Most Information In Literature In Relation To This Issue Is About Cows And Sheep.

The Mechanical Milking Could Cause Stress For Dairy Animals And Like Any Other Source Of Stress Could Lead To Decrease In Milk Production. It Is Essential For Milking The Maximum Excretion Of Milk, Which Could Be Inhibited By Stress Through Release Of Catecholamines Of Adrenalin And Noradrenalin (Barowicz, 1979; Silankove Et Al., 2000). These Hormones Cause Decrease In The Quantity Of Milk, Which Has Flowed Out, In Two

Ways: One Of Them Is Through Inhibition Of The Oxytocin Release From The Back Part Of The Pituitary Gland (Sibaja And Schmidt, 1975), Which Leads To Decrease In Its Quantity In Blood That Reaches The Mammary Gland (Gorewit And Aromando, 1985), And The Other Is By Blocking The Effect Of Oxytocin On The Secretory Cells Of The Mammary Gland, Through Connection With General Receptors (Lefcourt And Akers, 1984). In This Way Only The Milk That Is Held In The Udder Cistern Is Excreted, And The Alveolar Fraction Is Held As Residual Milk (Mckusick Et Al., 2002). In Case When Alveolar Milk Is Not Separated, The Milk Productivity Is Decreased In 30% (Mckusick Et Al., 2002). In This Way, By Choosing Animals, Which Are More Slightly Susceptible To Mechanical Milking, The Productivity Of Herd Could Be Improved.

The Present Research Had The Aim To Study The Relation Between Milk Productivity And Temperament Of Goats.

Materials And Methods

The Experiment Was Conducted In 2013 At The Experimental Base Of RIMSA - Troyan. 53 Goats Were Used Of Breeds Bulgarian White Milk And Its Cross-Breeds With Toggenburg (Bwmxt) And Anglo-

Nubian (Bwmxan), At Different Ages. Goats Were Milked Mechanically.

The Original Method For Evaluation Of Passive-Defensive Fear Behaviour Toward Unknown Person And Partial Isolation From The Herd For Sheep Was Developed And Published By Belyaev And Martinova (1973). For The Aims Of Study Was Used The Methodology After The Model Of Dimitrov Et Al. (2008) For Sheep.

The Experiment Was Conducted With Hungry Goats, 12-14 Hours After Evening Feeding (In The Morning). Goats Were Kept In A Separate Premise, As Groups Of 8-10 Animals Were Introduced In The Premise Where The Experiment Was Conducted. In The Feeding Racks In The Experimental Premise Was Placed Fodder, In A Way That The Goats To See That. The Experimenter Stood Behind The Feeding Rack And With The Help Of A Brush Dipped In Paint, Which Was Attached To A Long Stick, Marked The Animals Which Approached To Food. During The First Three Minutes Was Marked A Spot On The Head Of The Animal, During The Next 3 Minutes (I.E. From 3 To 6 Minute) On The Withers, And During The Last 3 Minute (I.E. From 6 To 9 Minute) On The Rump. As A Result, Goats That Approached To Food Only Once Had One Mark, And Those That Ate During The Whole Time, Had Respectively Three Marks. Goats

With Three Spots Are Characterised By A Lack Of Passive-Defensive Fear Reaction, And Those That Did Not Have Any Mark Were Representatives Of The Most Coward Animals In The Herd. According To The Number Of Spots, The Animals Were Divided Into Two Groups: Goats With A Calm Temperament (C – Two Or Three Spots) And Goats With A Nervous Temperament (N – 0 And 1 Spots).

In Relation To Determining The Influence Of Temperament Of Mother-Goats On Their Milk Productivity Were Used Data From Studbooks For The Average Milk-Yield For Lactation Of Each Goats In 2013.

Results And Discussion

Milk Productivity Data Were Analysed Together For The Examined Goats And Were Separated According To Age. From The Examined 53 Goats, 35 Were Determined As Having A Nervous Temperament (0 And 1 Spot) And 18 With A Calm Temperament (2 And 3 Spots). For Animals With A Calm Temperament Was Registered Average Milk-Yield Of 596 L, Which Was 20 L More Than In Goats With A Nervous Temperament (576 L). In Table 1 Are Shown Data For The Average Values Of The Index Average Milk-Yield For Lactation In Mother-Goats At Different Ages, With A Calm And Nervous Temperament.

Table 1. Average values of index average milk-yield for lactation (litre) for mother goats with nervous and calm temperament, at different ages

Indexes	Nervous type		Calm type	
	n	$\bar{X} \pm S \bar{X}$	n	$\bar{X} \pm S \bar{X}$
Average milk yield for lactation at age of 1.5 years	2	531±82		
Average milk yield for lactation at age of 2.5 years	12	560±22	5	647±34
Average milk yield for lactation at age of 3.5 years	10	637±44	2	598±13
Average milk yield for lactation at age of 4.5 years	10	511±27	2	758±47**
Average milk yield for lactation at age of 5.5 years	1	689	2	556±23
Average milk yield for lactation at age of 6.5 years	4	560±14	3	473±19*
Average milk yield for lactation at age of 7.5-8.5 years	2	528±35	4	562±36

**P<0.01, *P<0.05

As it is seen from results in the table, the average values of index milk-yield for lactation, reliability was proven for goats at the age of 4.5 and 6.5 years. The highest milk-yield was registered in goats with a calm temperament at the age of 4.5 years (758±47 l).

Due to the small number of animals, we could not draw a well-grounded conclusion for the influence of temperament on the milk-yield for different ages in goats. Despite the considerably lower number of goats with a calm temperament, both for the herd as a whole, and when separated according to age, higher milk-yield was registered

for them. This gives us the reason to assume that the temperament of goats has an influence over milk-yield.

Unlike us, Ivanov et al. (2005), determined for the Local Stara Zagora sheep breed and dairy cross-breeds that sheep with a calm temperament had statistically proven higher milk-yield for lactation in all ages.

Murray et al. (2006) for dairy sheep obtained higher average daily milk-yield in sheep with a calm temperament (462 ± 36 grams/day) compared to 394 ± 33 grams/day - for sheep with a nervous temperament. As they used different way of testing the temperament than ours, i.e. „isolation box test” 3 weeks after birth.

Conclusions

Our studies showed that the emotional susceptibility of goats influenced their milk productivity.

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