www.roavs.com EISSN: 2223-0343
RESEARCH OPINIONS IN ANIMAL & VETERINARY SCIENCES

Milk production traits of Makoui ecotype sheep in Iran during 2009-2010

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Abstract

Meat and milk possess nutritive properties not available in plants and man has found many special uses for wool and fur. The purpose of this study was to analyze the milk production of Makoui ecotypes and the effects of different parameters on the milk production. So 159 sheep of this ecotype in two different age groups (2-5 and >5years old) with two approaches (oxytocin, hand suckling) were studied. Results showed that oxytocin injection (2.5cc) resulted in more milk (about twice) production, relative to hand suckling without the oxytocin injection caused a longer period of milk production. Age and the length of production had a significant effect on milk production.

Keywords: Milk production; sheep; oxytocin; Makouei ecotype

To cite this article: Hosseini AM, 2012. Milk production traits of Makoui ecotype sheep in Iran during 2009-2010. Res. Opin. Anim. Vet. Sci., 2(7), 440-442.

Introduction

Farm animals fill an important place in man's scheme of life. Their function is to convert raw materials into more refined products which are of more direct use to Man (Barker et al., 2009). Rough reeds are little, if any, direct use to man, but when animals have converted them into meat, dairy products and wool, they became practically indispensable to modern man's existence. Meat and milk possess nutritive properties not available in plants and man has found many special uses for wool and fur (Manaf Hosseini., 2005). Although the sheep population is high in Iran (Iran stands among the top ten sheep breeding countries), yet meat products do not suffice the domestic needs. Today with the unsatisfactory conditions of meadows, the increase in production is not possible by qualitative increase in sheep numbers. In other words, today, the sheep husbandry system in Iran is a very extensive system and we can change it into a semi extensive system by engaging necessary conditions like financial aid, research and encouragement, educating and marketing, therefore, an increase in production must be sought from a qualitative point of view. (Mehrshad et al., 2006). Using genetic quantitative principles is another key to improve transformation efficiency in sheep. It strives to meet the needs of society in the long term (Fatehi, 2007).

Livestock is an important national resource in Iran. More than half of the rural population depends at least in part on livestock for their livelihood (Manaf Hosseini, 2005). Livestock plays a key role in the lives of the rural poor, generating employment and often providing about 80% of their cash income. On average, 31.8% of the gross value of agricultural production is attributed to livestock production, which provides the main source of income and an important component of the average diet. The most common species of farm animals are sheep, goats, cattle, buffalo and camels. Production of milk, red meat, poultry meat and eggs has increased during the last decade by 7.19, 3.14, 7.92 and 5.37% annually, respectively (Manaf Hosseini, 2005). Guaranteed and remunerative producer-prices for major commodities have been the essential policy tool behind such performances. Milk production has grown as a result of improved yields and expanding herd size. Livestock by-products such as hides, intestines, hair and related products constitute a part of the country's exports. In this way sheep have many important roles in Iran's livestock production. The purpose of this study is

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to analyses the milk production of Makoui ecotypes and the effects of different elements on the sheep in Iranian Azerbaijan.

Materials and Methods

West Azerbaijan with an area of 37,599 km^2 and 4,520,100 sheep has the highest sheep density in the unit area. Makou, Salmas and a part of Uremia (center of Iran west azarbyjan province) city are the habitat for Makuei ecotype (Manaf Hosseini, 2005). According to previous studies, distribution and extension of this ecotype can be followed in Armenia and Turkey, whereas in Turkey it is named Ak-Karaman. This ecotype is rare in Iran which has preserved its purity and has not been mixed with other ecotypes (Fatehi, 2007). Two approaches have been used to study milk production in this ecotype. Milking was done by hand or machine regularly after injecting oxytocin. In this approach, the best interval between first injection, breast emptying and second injection, second emptying is said to be 4 hours (Mustafa et al., 2009). Hand milking without oxytocin injection was used.

Since in ecotypes and local farm, presence of the lamb seems necessary to suckle the whole milk from ewes, most of researchers demand that oxytocin approach be used to compare with other approaches to estimate produced milk in local ecotypes (Mustafa et al., 2009). Before recording, ewes were divided into two groups: two to five-year olds and more than five-year olds, later used in two different approaches. In oxytocin approach, lambs were separated from their mothers at 9 pm, and mothers were put into individual cages. At 10pm, 2.5cc of oxytocin hormone was injected in the venous and right after washing the breast, they were suckled by hand. Ewes were fed regularly as before. The exact time (hour, minute and second) of oxytocin injection was recorded. Later at two O'clock, second oxytocin injection was done and this time suckled milk was injected into a container with a balance having 0.1 gram error margin. Second oxytocin injection was recorded and pure milk production in 4 hours was determined. Multiplying this number with 6 resulted in sum of production in 24 hours. In the hand suckling approach, lambs were separated from their mothers the day before at 9 p.m. and by hand suckling the remaining milk was emptied from mothers' breasts. The following day at 9 O'clock, each ewe was suckled by hand and the milk was weighed and multiplied by 2 to show the whole production in 24 hours.

Statistical Analysis

Statistical analysis was done using the T-test for comparison of data in the control group with the experimental group. The results were expressed as Mean ± S.E.M (standard error of means). P value less than 0.05 was considered significant.

Results and Discussion

As seen in Table 1, using the oxytocin injection resulted in more milk (about twice) production relative to hand suckling without the oxytocin injection. In addition, the suckling period had a great impact on the whole production. Using oxytocin caused a longer period of milk production. In buffalos, oxytocin injection causes 1.3 fold increases in milk production (Mustafa et al., 2009).

The climate in this region is completely affected by the western mountain ranges (on borderline) and northern mountains. Due to the region's high latitude, the days are short. The sunny hours are less than other parts of Iran except for the Caspian coastline (Garbali and Asadi, 2006). The regional vegetation has been completely altered due to overuse with a higher rate of natural production power of the ecosystem, and because of the cutting down of trees, vegetation has changed into pasture accompanied by shrubs (in its different forms), which has been destroyed by disinterring shrubs and overgrazing. Despite this, humid regions (due to topographic conditions), have a high rate of vegetation growth and have preserved their vegetation (Garbali and Asadi, 2006). In Makou region, the relationship between sheep, grass and pasture shows that there are five sheep in every unit of pasture area, which shows high density of sheep in the region (Manaf Hosseini, 2005).

Table 1: Effect of different approach on total and length of milk production in Makouei ecotype

Approach	Oxytocin	Hand
Total milk production (Kg)*	98± 0.03^a	43 ± 0.04^b
Total length of milk production (Day)**	125 ±0.2^a	88 ± 0.1^b

*N:75; **33 days; ^{a,b}Means with different superscript differ significantly (P<0.05)

Table 2: Effect of age factor on total and length of milk production in Makouei ecotype

Age	2-5 years old	>5 years old
Total milk production (Kg)*	67 ± 0.01^b	74 ± 0.03^a
Total length of milk production (Day)**	83 ±0.1^b	131 ± 0.1^a

N:75; **33 days; ^{a,b}Means with different superscript differ significantly (P<0.05)

Age factor had a meaningful effect (P<0.01) on the length of production time and total milk production too. As shown in table 2, in second age group (>5 years old) milk production period was 131 days which was longer than for first group (2-5 years old) with 83 days. Previous studies showed that age factor had a strong

effect on milk production and length of milk production too (Ensminger and Parker, 1995).

Conclusion

This study showed that differences exist between two approaches and oxytocin injection had a positive effect on milk production and milk production period in comparison to hand method without oxytocin injection. On the other hand, age had a positive effect on two mentioned parameters and sheep with more than five years old produced more milk.

Acknowledgment

Many thanks to Azərbaycan Milli Elmlər Akademiyası, Faculty of Zoology, Baku-Azerbaijan, for scientific support of this research program.

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