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Original Research

Some factors affecting milk production and its components and some growth traits of local Awassi sheep

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ABSTRACT:

The study was conducted on a sample of 60 local Awassi sheep and their 76 births in the first research station of the Animal Production Department, College of Agriculture, Muthanna University, Muthanna Governorate, Iraq for the period from 1.7.2016 to 1.6.2017 to study the effect of some factors affecting production milk components and a number of growth characteristics of local Awassi sheep. These factors were the age of the mother, the type of birth, the weight of the mother at birth, the sex of the baby and the month of birth in a number of productive characteristics (daily and total milk production and length of the milk season). The average milk production was 556.5 g for four months (September, October, November and December). The effect of maternal age was significant ($P<0.05$) in daily and total milk production. The sex of the lamb had a significant effect ($P<0.05$) in the production of daily and total milk, while the type and month of birth did not have a significant effect on the studied production traits. All studied traits were affected by maternal weight at birth ($P<0.05$). It is concluded from the research that most of the studied factors have an important effect on the performance of sheep, which requires a study and determination of their impact and attention to administrative aspects of the herd to raise the level of performance and maximize economic return.

Keywords:

Awassi sheep, Milk production, Growth traits.

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INTRODUCTION

Local Awassi sheep were characterized by low production of meat and milk due to genetic and environmental factors due to the likelihood of their ability to live in bad environmental conditions at the expense of productive qualities. Consequently, the productive efficiency of ewes are low and require attention according to modern science in the management. It is noted that the productivity of sheep is less than meat and milk compared to the original specialized breeds. Therefore, the use of modern methods of nutrition and improved environmental and genetic conditions to increase the productivity of these sheep (Al-Rawi, 2006). The study of qualities of importance economic development in all animals, including sheep, from breeding and improvement plans. It is known that members of one or different clans vary in their productivity because of their different genetic genotype and environmental conditions (Juma *et al.*, 1974). The total number of sheep in Iraq is estimated to be five millions, most of them from goats, which are mainly raised for meat production and milk (Mazin, 2011). Al-Rawi *et al.* (2000) reported that sheep farming in Iraq still takes the traditional pattern, which depends on grazing and herding in grazing areas especially in the production of milk, which is an important source of nutrition and growth of the resulting offspring in the herd, so it is necessary to follow the modern methods of management and nutrition and improve the environmental conditions and methods of genetic improvement known. Al-Jumali (2001); Peana *et al.* (2007) and Abdullah and Aref (2008) showed that maternal age at birth, birth season, milking time and daily number of milking time, as well as strain are the most important factors affecting milk production and length of production season. Al-Azzawi and Al-Rawi (1997) caused the variation in the production of milk to the genotype, the type of birth and the sex of lamb. Al-Samrai and Al-Anbari (2009) observed that local Awassi sheep could respond to genetic improvement to increase milk production. The current study aims to study the effect of certain factors such as the breed, age of mother, type of birth, birth state, mother weight, sex of lamb and month of birth in a number of productive characteristics (daily and total milk production and length of milk season) on local and Turkish Awassi sheep.

MATERIALS AND METHODS

The research was conducted in the first research station of the Animal Production Department, College of Agriculture, Muthanna University, Muthanna Governorate-Iraq for the period from 1.7.2016 to 1.6.2017 on a sample of 60 local Awassi sheep and her 76 births to study the effect of some factors affecting production and components of milk and growth characteristics of local Awassi sheep. The system for raising ewes shall be in semi-open barns (40% enclosed and 60% open) for sheltering. The area of the shed is 15 m x 50 m, with drinkers and feeders of 15 and 30 m. respectively. The birth ewes are placed in their own sheds (3x6 m), whose birth and weight are numbered within 24 h of birth and given to the us or colostrums from the first hour of birth, then the new born suckling milk until weaning. Preparation for the sabbatical season, preparation for pregnancy and kidding as well as health and veterinary care. The amount of feed varies depending on the season and availability, as well as the production status of the animals. It depends on the feeding of the animals on the green feed or coarse feed freely, and the concentrated feed is provided by 500 g / day / animal. This amount is increased before the reproductive season and during it for ewes and rams according to the specific structure of all animals with the provision of molds mineral salts, and there is grazing animals up to 4h a day. As for newborns feeding, they are left with their mothers to suckling. They begin with two weeks of eating low amounts of green fodder for up to 100 g/day of concentrated feed. The weaned lambs are down to 3% of body weight and were feed free of charge and weaned at 120 days.

Table 1. Effect of the age of the ewe, the type of birth and the sex of the new born in the studied growth characteristics

S. No	Affecting factors	No. seen	Mean ± Standard error		
			Birth weight (kg)	Weaning weight (kg)	Total weight gain (kg)
	Dam age (year)				
1	4	34	4.11±0.16	18.82±0.73	14.71±0.36
2	5	26	3.96±0.11	17.09±0.77	13.13±0.29
3	Significant level	-	NS	*	*
	Birth type				
1	Single	44	4.48±0.14	19.26±0.84	14.78±0.62
2	Twin	16	3.53±0.16	17.30±0.69	13.77±0.59
3	Significant level	-	*	*	*
	Sex				
1	Male	35	4.19±0.13	18.41±0.66	13.59±0.57
2	Female	41	3.83±0.13	17.73±0.87	13.90±0.61
	Significant level	-	*	*	NS

*P<0.05, NS: Not significant

The breeding season is often done from the middle of August to mid-October. The ewes are then isolated with the ram in the box at for 24 hours, then transferred to the ewe sheds (Al-Brkat, 2017). After the end of the breeding season, rams are used to ensure that all ewes are served. There is no time for the use of vaginal sponges with the progesterone hormone, and the date of breeding are recording and the ram number is recorded, as well as the weight of dams during at the time of the breeding. In the last days of pregnancy, individual preparation for this for pregnant ewes. new born are whining at birth and counted after 24 h of delivery. Colostrums are given since the first hour of birth and the baby continues suckling until weaning age. Ewes with twin births are separated from the twins' pens for care and care.

The animals of the station are subject to a preventive health program supervised by veterinarians and the management of agriculture's engineers according to the following steps:

- Dipping animals IN the cytomethrine solution (10%) twice a year (May and October) to eliminate external parasites.
- Vaccination pregnant dams and adult animals with clostridium vaccine and vaccinated newborns this vaccine twice after birth two weeks and be repeated again after a month.
- Vaccination against sheep pox and foot and mouth disease.
- Treatment of infection with mastitis in the event of occurrence.

Statistical analysis

The General Linear Model (GLM) method was used within the Statistical Analysis System; SAS (2012) to study the effect of the age of sheep on the production of milk and its main components and the effect of the age of the herd and the sex of lamb in the characteristics of growth studied and compared the differences between the averages after the application of the method of the least squares mean.

Table 2. Effect of the age of ewe in daily milk production for the studied months

S. No	Character	General mean	Mean ± Standard error		Significant level
			No. 34 - 4 years age	No. 26 - 5 years age	
1	Milk production September (g)	507.62±9.29	523.48±12.42	492.12±9.54	*
2	Milk production October (g)	652.23±15.06	671.254±14.68	633.17±17.32	*
3	Milk production November (g)	584.50±12.92	593.74±11.47	576.81±12.58	NS
4	Milk production December (g)	483.71±9.06	518.62±11.36	461.96±10.75	*

*P<0.05, NS: Not significant

RESULTS AND DISCUSSION

Milk production

The average milk production was 556.5 g for four months, with 507.62±9.29, 652.63±15.06, 584.5±12.92 and 483.71±9.06 g for the months of September, October, November and December respectively (Table 2). This estimate was closely compared to Eliya and Juma (1970) and Karam *et al*. (1971), when they studied the production of milk for local Awassi sheep and more than what reached Al-Kalisi (1996) and Al-Zobaie (1999) with an average milk production of 51.62 and 86 liters respectively, Al-Kalisi (1996) and Al -Azzawi and Al-Rawi (1997) attributed the difference in the production of milk to the type of birth, the sex of the new born and the genetic genotype.

Dam age

The results of the statistical analysis Table 2 showed that the age of the dam at birth had a significant effect (P<0.05) in the studied production traits. The four year-old (34 ewes) produced milk production averaged 523.48±12.42, 671.254±14.68, 593.74±11.47 and 518.62±11.36 g during September, October, November and December respectively, while the 5-year-old (26 ewes) were 492.12±9.54, 633.17±17.32, 576.81±12.58 and 576.81±12.58 g for September, October, November and December respectively. The reason for the decline in milk production with the increase in age is due to the lack of efficiency of the milk system responsible for milk production, as well as the increase in the size of the digestive tract and the lack of utilization of feed materials and the low efficiency of food conversion, which negatively affects milk production (Al-Kass *et al.*, 1993; Al-Zobaie, 1999; Abdel and Mazen, 2008).

Type of birth

It is clear from Table 1 that the type of birth has a significant effect (P<0.05) in the studied production traits, despite the statically superiority of the ewes that gave birth to twins in balance with those of single births in both daily and total milk production and length of the milk season. This was supported by Firas *et al*. (2016) that the type of birth had a significant effect on milk production. The result was identical to that of Dikmen *et*

Table 3. Effect of the age of dam in some milk components for different months

S. No	Character	General mean	Mean ± Standard error		Significant level
			No. 34 - 4 years age	No. 26 - 5 years age	
1	Protein percentage in milk (%)	4.35±0.08	4.05±0.05	4.47±0.05	*
2	Fat percentage in milk (%)	4.63±0.07	4.02±0.14	5.11±0.12	*
3	Lactose percentage in milk (%)	5.26±0.13	5.18±0.09	5.34±0.07	NS
4	Total solid percentage in milk (%)	12.64±0.47	11.86±0.25	13.19±0.18	*

*P<0.05 , NS: Not significant

al. (2007); Al-Salman (2009); Ustünern and Ogan (2013) while, Seyrani *et al*. (2012) and Tamer *et al*. (2016) did not found any effect of the type of birth on milk production.

Sex of lamb

Four-year-old ewes out performed five-year-old ewes at birth and weaning at (P<0.05), where they were 4.19±0.13 and 18.41±0.66 kg respectively, while 3.83±0.13 and 17.73±0.87 kg respectively. The mean weight gain for males was higher than that of females (P<0.05), which was 13.59±0.57 and 13.90±0.61 kg, respectively (Table 1). The results were consistent with some researchers (Firas *et al*., 2016; Dikmen *et al*., 2007; Al-Salman 2009; Ustüner and Ogan, 2013).

Effect of dam age in some milk components

Table 3 shows that there is a significant effect (P<0.05) on the age of the mother in the milk components represented in the ratio of protein, fat and total solids, while the differences were not significant in the ratio of lactose. The effect of dam on some components of milk is related to several factors, foremost of which is the amount of milk produced (Allah *et al.*, 2011; Kridli *et al.*, 2007; Haile *et al.,* 2017). As the percentage of milk protein increased with the stages of milk yield and the highest value was 6.3% at the end of weaning.

CONCLUSION

It can be concluded through the investigation that most of the studied factors have an important effect on the performance, (milk production, milk composition and growth traits) of sheep, which requires a study and determination of their impact and attention to administrative aspects of the herd to raise the level of performance and maximize economic return.

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