



STUDY OF FACTORS AFFECTING SOME PRODUCTION TRAITS IN AWASSIEWES

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Abstract

The paper describes the results of the analysis of 156 records of Awssi ewes born at Al-Najaf animal breeding station private sector during 1991-1999. The factors affecting total lamb number (TLN) and weight (TLW) at birth per ewe during its live productivity up to the sixth parity, and total lamb number (TLN₂- 6P) and weight (TLW₃- 6P) at birth per ewe during 2nd to 6th pwrity were year and type of ewe birth age at first lambing, number of lambs born at first parity and regression on dam weight at first lambing. The overall mean for TLN and TLN₂-6P was 6.24 and 5.45 lambs respectively, and for TLW and TLW₂-6P was 26.71 and 23.71kg. respectively. Type of ewe birth had a significant effect on TLN, TLN₂-6P and TLW₂-6P and TLN and TLW were significantly influenced ($P < 0.05$) by age at first lambing.

The effect of year of ewe birth on all traits, and of No. of lamb born at first parity on TLN₂-6P and TLW₂-6P was not significant. Regrassion of TLN₂-6P and TLW₂-6P on dam weight at first lambing was not significant.

Key words: Awassi ewes; Animal breeding; Fooding; Age

Introduction

The number of lambs that are reared to market age or the total weight per ewe per year is usually considered the most important effect of profit in a well – managed sheep enterprise. In some cases, the optimal number of lambs may depend on limitations of feed or other resources that preclude high levels of reproduction. The number of lambs born per year can be increased by two methods. These are (1) increasing the number of lambs born per lambing, and (2) incresing the number of lambings per ewe per year or decreasing the lambing interval (Hogue, 1987).

The aim of this work is to investigate total lamb number and weight at birth per ewe during its live productivity up to the sixth parity, and total lamb number and weight at birth per ewe during 2nd to 6th parity from its lype productivity with some of the non-genetic factors affecting them.

Material and Method

Records were utilized of 156 Awassi ewes born during 1991-1999 at Al-Najaf – animal breeding station, Ministry of Agriculture, Iraq. The productivity of ewes was studied twice. The first was total lamb number (TLN) and weight (TLW) at birth per ewe during its live productivity up to the syxth parity, and after ignoring the ewes producyivity at first parity. The second was total lamb number (TLN₂ – 6p) and weight (TLW₂ – 6p) at birth per ewe during 2nd to 6th parity from its live productivity.

The animals grazed alfalfa, Egyptian clover or green barley pastures during the day and housed during the night when pastures are unsufficient, animal were provided with concentrate and straw. Ewes were flushed three weeks prior to mating season and concentrate allowance of 0.5kg was given to ewes 6 to 8 weeks prior to and after lambing. New born were weight and marke by plastic ear tages within 24hr after birth.

Animals were vaccinated against enterotoxaemia and dronched against endoparasites. Animals were dipped after shearing for control of ecto parasites.

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Each traits was analyzed seperately according to the following fixed model using maximum likelihood (Schaeffer, 1976).

$$Y_{ijklm} = U + Y_i + T_j + A_k + N_i + e_{ijklm}$$

Where:

Y_{ijklm} Is a measurement on the m^{th} ewe born during the i^{th} year, having he j^{th} type of birth, and k^{th} age at first lambing lambing with L^{th} number of lambs born at first parity.

U is an overall mean associated with each observation.

Y_i is the effect of i^{th} year of ewe birth.

T_j is the effect of j^{th} type of ewe birth.

A^k is the effect of k^{th} age at first lambing.

N_j is the effect of r^{th} number of lambs born at first parity included in the models for $TLN_2 - 6p$ and $TLW_2 - 6p$.

e_{ijklm} is a random error associated with each observation assumed to be $NID(0,1 \text{ Ge}^2)$.

Regression of TLN_2-6p and TLW_2-6p on dam weight

at first lambing were included in the different models.

Results and Discussion

Means with their standard error for TLN_2 , TLW_2 , TLN_2-6p and TLW_2-6p are presented in (Table 1) and analysis of variance is presented in table.

Year of EWE Birth

In the current work, the effect of year of ewebirth on all traits studied was not significant. The non – significant effect of year on number of lambs born per ewes lambing is similar to results reported by Dhillon *et al.* (1979) and Abdul-Rahman *et al.*(1984) and was contrary to those reported by Sidell *et al.*(1962). Wright *et al.*(1975) and Walker *et al.*(1979) in different breeds. Marogenis (1982) ound similar, effect of year on latter weight at birth. The non-significant difference in this study might be due to the fact that, all the eweswere in the same condition within the breeding season.

Type of EWE Birth

As it can be seen from table 1 and 2. Twin ewes had significantly more number of lambs at birth during its live productivity (6.40 vs 5.79), TLN_2-6p (5.87 vs 5.32) and

Table 1: last – Squares means with standared errors of factors affecting the studied traits

Effect	No. of ewes	TLN	TLW	TLN ₂ -6p	TLW ₂ -6p
		No. ± S.E.	Wt.(kg) ± S.E.	No. ± S.E.	Wt.(kg) ± S.E.
Overall mean	156	6.24±0.13	26.71±0.48	5.45±0.11	23.71±0.44
Year of birth					
1991	11	6.14±0.39	27.61±1.61	6.12±0.39	27.69±1.61
1992	51	6.43±0.24	26.95±0.94	5.74±0.21	24.53±0.81
1993	43	5.67±0.25	25.40±0.99	5.24±0.23	23.57±0.39
1996	19	6.22±0.34	25.87±1.11	5.54±0.34	22.54±1.09
1997	15	6.14±0.39	25.13±1.39	5.32±0.35	21.97±0.29
1998	7	5.80±0.31	25.12±1.43	5.40±0.18	23.75±1.08
1999	10	6.24±0.40	26.05±1.78	5.81±0.21	24.48±1.36
Type of ewe birth					
Single	103	5.79±0.15			
Twin	53	6.40±0.24			
Age first lambing					
2 years	109	6.67±0.15			
3 years	47	5.52±0.21			
No. of lambs born at 1 st					
Parity	—	—	—	5.22±0.18	22.38±0.78
0	—	—	—	5.70±0.15	24.95±0.54
1	—	—	—	5.86±0.45	24.90±2.10
2					
Regression on dam weight at 1 st lambing	156	—	—	0.02±0.02	0.12±0.08

Table 2: Analysis of variance for the various effects on studied traits in Awassi ewes (mean – squares).

Sourced of variation	TLN		TLW		TLN _{2-6p}		TLW _{2-6p}	
	d.f.	Mss	d.f.	Mss	d.f.	Mss	d.f.	Mss
Year of ewe brith	6	2.48 ^{NS}	6	16.96 ^{NS}	6	1.60 ^{NS}	6	35.51 ^{NS}
Type of ewe brith	1	12.51*	1	119.93 ^{NS}	1	9.50*	1	116.83 ^{NS}
Age at first lambing	1	38.20**	1	574.98**	1	0.001 ^{NS}	1	2.30 ^{NS}
No. of lambs born at first parity					2	1.12 ^{NS}	2	23.56 ^{NS}
Regression on dam weight at first lambing					1	1.24 ^{NS}	1	61.53 ^{NS}
Error	147	2.41	147	32.68	144	1.95.	144	29.20

** p < 0.01

* p < 0.05

N.S non significant

TLW_{2-6p} (25.0 vs 23.12 kg) than singles, where as, there was significant effect of type of ewe birth on TLW.

The difference in TLN due to type of ewe birth was contrary to those found earlier by Southam *et al.*(1971) and Atkins (1986). The increase in number of lambs born per twin ewes than singles maybe due to selecting for twinning.

Age at First Lambing

Dam age at first lambing had a high significant (P < 0.01) effect on TLN and TLW, while on TLN_{2-6p} and TLW_{2-6p} had not significant effect.

In this study the 2-year – old – ewe lambed 1.15 more lambes, and 4.46 more kg. than the 3-year-old-ewes. Where as Amir *et al.*(1981) found an increase in the prolificacy with the ewe age: the 4-to 5- years – old – ewes lambed 0.21 more lambes than the 1-to 3 year – old animals. The effect os dam age at first lambing on TLN which observed here confirms earlier findings in different breeds of sheep (wright *et al.*, 1975; walker *et al.* 1979; Kuha and Baah, 1985; Atkins, 1986 and Mahmoud *et al.*, 2019) but is contrary to the findings of Abdul-Rahman *et al.*(1984) and Abdullatif and Ajam (1988). Mavrogenis (1982) found significant effect of lactation number on litter weight at birth.

Number of Lambs Born at First Parity

In the present study, the effect of number of lambs born at first parity on TLN_{2-6p} and TLW_{2-6p} was not significant (table 2).

Regression of TLN_{2-6p} and TLW_{2-6p} on dam weight at first lambing was not significant. Similar result reported by lasler *et al.*(1972) about the effect of weight of dam on number of lambs born per ewe lambing. While Abdullatif and Ajam (1988) found a significant effect of

weight of dam on the same trait.

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