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Effect of Some Environmental Factors and Inbreeding on Some of Growth Traits of Saidi Lambs.

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ABSTRACT

In the present study data were collected from Seds experimental station of Animal Production, Ministry of Agriculture, during the years from 1995 to 2006 on local Saidi sheep. A total number of 1644 Saidi lambs records were available for this study. The data were analyzed by the method of Least-Square analysis. The study aimed to determine the effects of some environmental factors (lambing season, lambing year, sex of lamb and type of birth) and inbreeding on the weights of lambs at birth, monthly weight until 18 month and average daily gain in body weight at different periods of age, Bw-3, >3-6, >6-9, >9-12, >12-15 and >15-18 months. All weights at different age significantly affected (P<0.001) by the environmental factors except weights at the periods of 12, 16, 17 and 18th for lambing season and at 15, 16 and 18 months for type of birth. The inbreeding did not had significant effect on body weights at different periods of age except the weight at one and two months of age were significant (P< 0.001). The average daily gain in body weight of Saidi lambs at all different periods of age were significantly affected (P<0.001) by lambing season, lambing year and sex of lamb except at the period of >12-15 months for lambing season were not significant. Results indicated that only the average daily gain in body weight at the periods of >Bw-3 and >3-6 months were influenced (P<0.001) by type of birth. The average daily gain at the period from birth to 3 months affected significantly by inbreeding (P<0.037). Therefore the non-genetic factors must be considered in evaluating growth performance in the case of increase the economic gain to avoid the breeding effect.

Keywords: Saidi lambs, environmental factors, inbreeding, weights, and growth traits.

INTRODUCTION

Saidi sheep are one of the oldest breeds in Upper Egypt. Animals raised mainly for meat production from old time while wool consider as a secondary production trait. The increasing request for Saidi sheep based on its high conception rate (82-92%) as found by El-Hommosi and Abd El-Hafiz GE., 1982 and twining rate (1.5%) as reported by Galal, 1987. Nowadays the demand of this breed increase for its high productive performance. The birth and weaning weights of lambs are not only been influenced by genetic factors but also by physiological and environmental factors (Mandal *et al*., 2006). Birth weight (Bw) is the main parameter in meat production. There were strong correlation between birth weight and final weight as well growth rate viability of new born animals (Abbas *et al*., 2010) . In the same direction weaning weight has a highly relative economic importance to the farmer. Hence, more information on these factors is needed to determine the effectiveness of breeding based on these characters. Thus, several workers studied on some environmental factors (lambing year, lambing season, sex of lamb and type of birth) on body weights and average daily gain of several breeds (Oudah, 2002 ; Sakr, 2005 ; Teleb *et al.*, 2008 ; Doaa *et al*., 2009;; Bermejo *et al*., 2010 and Mousa *et al*., 2013).

The change in performance per unit of inbreeding can be expressed as the inbreeding. The inbreeding process increases homozygosity for whatever genes are present, including the less desirable ones, and has been associated with a decline in performance (Burrow, 1993). In genetic programs it could be improve population of the sheep by increasing the frequency of desirable genes by using the inbreeding, but it is also leads to economic losses. Several workers such as Galal *et al.*, (1981) and Mandal *et al*., (2004) studied the effect of inbreeding on productivity of sheep. There was no found any study on effect inbreeding on growth traits in Saidi lambs under condition Egyptian. So, the main aim of our study was to determine the effects of some environmental effects (lambing year, lambing season, type of birth, sex of lamb) and inbreeding on body weight from birth until 18th and average daily gain in body weight at different ages in Saidi lambs

MATERIALS AND METHODS

The incorporation between Animal Production Research Institute and Faculty of Agriculture, Mansoura University was carried out in this study. Data were collected during the period from 1995 to 2006. Saidi lambs raised in Seds experimental station. A total of 1644 records of Saidi lambs were available for this study.

A lambing system was practiced every eight months (three mating per two years). There were three seasons of mating in January, May and September and therefore lambs were birthed in June, October and February. Only weight not less than 35 kg was permitted for ewe to join the first time to enter the mating. Ewes were divided into groups (20 to 25 ewes) randomly with a fertile ram for a period of 35 to 45 days. Ram should be replaced by another, in case of failing to mate the ewes after one week. Lambs were left with dams up to weaning at 90 days of age. Lambs were weighted every month from birth until 18th of age. Lambs were fed ad libitum on wheat straw or rice stubbles and concentrate mixture. During November to May the lambs were allowed to graze Egyptian clover pasture.

Type of birth, sex and pedigree were recorded for new born lambs which identified at lambing and weighted within twenty-four hour of birth and monthly until 18 months. Then average daily gain (ADG) was calculated for the stage of growth lambs as following intervals**:**

(1) ADG Bw - 3 = Birth to three months of age.
(2) ADG >3 - 6 = Three to six months of age.
(3) ADG >6 - 9 = Six to nine months of age.

(4) ADG >9 - 12 = Nine to twelve months of age.
(5) ADG >12- 15 = twelve to fifteen months of age.
(6) ADG >15-18 = fifteen to eighteen months of age.

The GlM procedures of SAS (1998) were used to statistical analysis. Using procedure (Orhan *et al*., 2004) and as well as linear partial regression of the trait on inbreeding coefficient of lamb. The algorithm of SAS, (1998) was used to calculate the coefficients of inbreeding utilizing pedigree data of all individuals. Assumptions were made that all lambs had an inbreeding coefficient of zero in the first year (1995). Duncan (1955) were used for tested the significant differences between fixed items

Least squares analysis of variance option, available in SAS software (Release 6.12, SAS Inst. Inc., Cary, NC, 1998), was used to determine the effects of sex (male and female), type of birth (single, twin and triplet), season of lambing (February, June and October) and year of birth (every year included three successive lambing seasons) on different weights of Saidi lambs from birth and monthly until 18 month of age and average daily gain in body weight at different studied periods of age.

The following model was used to analyze data for different weights of Saidi lambs from birth and monthly until 18 month of age and average daily gain at different periods.

$$Y_{ijklm} = \mu + C_i + M_j + S_k + T_l + e_{ijklm}$$

Y_{ijklm} = an individual observation,
μ = the overall mean,
C_i = fixed effect i th year of lambing i= (95, 2005),
M_j = fixed effect of j th season of lambing, j = (February, October or June),
S_k = fixed effect k th sex k = (male and female),
T_l = fixed effect l th type of birth l = (single, twins and triplet) and
e_{ijklm} = residual term assumed to be randomly distributed with zero mean and variance $\sigma^2 e$.

RESULTS AND DISCUSSION

The average body weight of lambs at all examined ages and average daily gain in body weight at different periods are showed in Table 1. The average weights of Saidi lamb were (2.7 ± 0.54), (12.53 ± 3.2), (19.48 ± 4.93), (25.58 ± 6.3), (28.94 ± 6.29), (31.37 ± 6.68), (33.75 ± 6.42) kg at Bw, 3, 6, 9, 12, 15 and 18 months of age, respectively. Also, Table 1 showed that the average daily gain were (108.73 ± 36.27) kg and (33.75 ± 6.42) kg at birth to 3 months and >3- 6 months periods, respectively.

The results indicated that birth weight of Saidi lambs was lower than found by Doaa *et al*., (2009) (3.2 ± 0.8) for the same breed. The coefficient of variations (CV) were increased with the advancing of age in case of growth traits up to weight at two months and thereafter it declines as shown in Table (1). Similarly lower CV% after 6 months of age is normally, found by Bathaei and Leroy (1998) as a result of culling animals which leads to decline in the variation for the particular trait; the weight becomes uniform after decline the weaning stress and maternal influence which resulting in reducing variation. Similar reports were given by Kumar (2000) for Chokla sheep. In the same trend, the decline trend from birth to adult stage was observed by Ahmad (2002) in Avikalin sheep. However, the CV for average daily gains increased subsequently from birth to 18 months of age (Table 1). Similarly, results agree with those reported by Kumar and Gandhi (2010).

Table 1. The mean weights, standard deviation (SD) and coefficient variation (CV) from birth until 18 months of age and average daily gain at different periods for examined Saidi lambs.

Trait	X	SD	CV
BW	2.7	0.54	20.000
W1	6.88	2.22	32.267
W2	9.96	2.77	27.811
W3	12.53	3.2	25.539
W4	15.09	3.67	24.321
W5	16.95	4.45	26.254
W6	19.48	4.93	25.308
W7	22.06	5.59	25.340
W8	23.71	5.97	25.179
W9	25.58	6.32	24.707
W10	26.15	6.08	23.250
W11	27.25	6.04	22.165
W12	28.94	6.29	21.735
W13	29.86	6.18	20.697
W14	30.97	6.52	21.053
W15	31.37	6.68	21.294
W16	32.58	6.69	20.534
W17	33.53	6.48	19.326
W18	33.75	6.42	19.022
gain BW - 3	108.731	35.27	32.438
gain >3 - 6	77.837	39.803	51.136
gain >6 - 9	72.239	41.955	58.078
gain >9 - 12	58.989	39.512	66.982
gain >12 - 15	51.659	35.445	68.613
gain >15 - 18	57.569	52.479	91.158

Weights of Saidi lambs of the present study during different lambing seasons (winter and summer) were showed in Table 2. Lambing season significantly affected all weights at different age stages, except weights at the periods of 12, 16, 17 and 18th as in table 2. Generally, Teleb *et al*., (2008) reported that autumn (September - November) is the most favorable breeding season for the Saidi sheep followed by summer and winter, where most ewes were cycled during autumn. In the same way, results of Doaa *et al*., (2009) indicated that birth weight of Saidi lambs was significantly influenced by lambing season (P< 0.001). On the other side results reported by Hassan (1993) showed that the crossbred lambs (Choiss rams with Ossimi and Saidi ewes) born in winter were significantly heavier by 1.8, 2.42 and 2,93 kg at weaning, 6 and 12 months of age, respectively than those birthed in summer.

The results of several experiments draw the attention to the importance of season of birth using different breeds. In this respect El-Shennawy *et al*., (1998) reported that lambing season had significant effect on weaning weight, 4, 6 and 18 months of age for Egyptian Rahmani, Ossimi and their crosses with Finn sheep. The influence of lambing season on weight at 3 months was significant (P<0.00l) but was not significant effect on weight at 6 months of age for Rahmani sheep

(Oudah, 2002). Mousa *et al*., (2006) indicated that there was significant effect ($P < 0.0001$) of lambing season on weight at both birth and weaning of Farafra lambs. Bermejo *et al.,* (2010) indicated that lambing season affected (P<0.0l) weaning weight and daily weight gain, with the lowest weights being for Canarian hair lambs born in winter. Kumar *et al*., (2017) also, revealed that there was a significant effect ($P < 0.01$) of lambing season on birth weight, weaning weight and (P<0.05) weight at 9 months except weight at 6 and 12 months in Nellore lambs.

Table 2. Effect of lambing season, sex , birth type and estimate of inbreeding on weight of Saidi lambs from birth until 18 months of age.

Season	BW	w1	w2	w3	w4	w5	w6	w7	w8	w9	w10	w11	w12	w13	w14	w15	w16	w17	w18
February	2.59 ^{a}	5.98 ^{b}	8.98 ^{b}	11.53^{b}	13.93^{b}	16.17^{a}	19.04^{a}	21.29^{a}	21.77^{ab}	23.00^{b}	23.97^{b}	25.63^{b}	28.01^{a}	28.87^{c}	29.99^{b}	30.94^{b}	32.53^{a}	33.6^{a}	36.61^{a}
Jun	2.54^{b}	7.15^{a}	9.91^{a}	12.09^{b}	14.16^{b}	15.51^{b}	17.22^{c}	19.58^{c}	21.52^{b}	23.67^{b}	25.32^{a}	26.43^{a}	28.87^{a}	30.37^{a}	31.84^{a}	32.48^{a}	32.38^{a}	33.42^{a}	35.06^{a}
October	2.43^{b}	6.67^{a}	9.7^{a}	12.03^{a}	14.17^{a}	15.79^{a}	17.47^{b}	19.7^{b}	22.22^{a}	24.66^{a}	25.81^{a}	27.06^{a}	28.05^{a}	28.96^{b}	28.69^{b}	31.21^{a}	32.17^{a}	31.77^{b}	30.94^{a}
SEM	0.04	0.16	0.21	0.25	0.29	0.38	0.43	0.34	0.53	0.56	0.57	0.58	0.62	0.62	0.67	0.73	0.87	0.99	1.80
Prob. (Pr > F)	0.0001	0.0001	0.0001	0.0001	0.0005	0.0001	0.0001	0.0001	0.0088	0.0001	0.0001	0.0001	0.1716	0.0001	0.0001	0.0001	0.1137	0.0665	0.2404
Sex																			
Mal	2.64^{a}	6.76 ^{a}	9.85 ^{a}	12.27 ^{a}	14.56 ^{a}	16.62 ^{a}	19.35 ^{a}	22.10 ^{a}	24.34 ^{a}	26.99 ^{a}	28.37 ^{a}	30.12 ^{a}	32.42 ^{a}	33.77 ^{a}	34.76 ^{a}	36.32 ^{a}	37.31 ^{a}	37.90 ^{a}	38.78 ^{a}
Female	2.40 ^{b}	6.45 ^{b}	9.21 ^{b}	11.49 ^{b}	13.61 ^{b}	15.02 ^{b}	16.47 ^{b}	18.28 ^{b}	19.34 ^{b}	20.57 ^{b}	21.70 ^{b}	22.63 ^{b}	24.20 ^{b}	25.04 ^{b}	25.59 ^{b}	26.77 ^{b}	27.42 ^{b}	27.96 ^{b}	29.62^{b}
SEM	0.03	0.15	0.19	0.23	0.27	0.36	0.40	0.45	0.49	0.52	0.53	0.53	0.57	0.57	0.62	0.67	0.81	0.91	1.50
Prob. (Pr > F)	0.0001	0.0076	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
TYPE																			
Single	2.88 ^{a}	7.44 ^{a}	10.99 ^{a}	13.47 ^{a}	15.93 ^{a}	17.79 ^{a}	20.18 ^{a}	22.55 ^{a}	24.32 ^{a}	26.09 ^{a}	26.96 ^{a}	28.29 ^{a}	29.71 ^{a}	30.71 ^{a}	31.85 ^{a}	32.35 ^{a}	33.55 ^{a}	34.75 ^{a}	34.51 ^{a}
Twin	2.53^{b}	6.34^{b}	9.25^{b}	11.51^{b}	13.78^{b}	15.42^{b}	17.60 ^{b}	19.85 ^{b}	21.43 ^{b}	23.29 ^{b}	24.65 ^{b}	25.96 ^{a}	28.08 ^{a}	29.29 ^{a}	30.56 ^{a}	31.27 ^{a}	32.37 ^{a}	33.36 ^{a}	32.43 ^{a}
Triple	2.16^{c}	6.03^{b}	8.35 ^{b}	10.70^{b}	12.54 ^{b}	14.26 ^{b}	15.95 ^{b}	18.17 ^{b}	19.76 ^{b}	21.96 ^{b}	23.49 ^{b}	24.87^{a}	27.13 ^{a}	28.21 ^{a}	28.11 ^{a}	31.01 ^{a}	32.17 ^{a}	30.68 ^{a}	35.66 ^{a}
SEM	0.041	0.188	0.245	0.248	0.342	0.447	0.496	0.565	0.614	0.654	0.658	0.668	0.713	0.714	0.773	0.836	0.996	1.126	1.843
Prob. (Pr > F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0004	0.0001	0.0045	0.0895	0.0613	0.0171	0.0783
Inbreeding effect	-0.0045	-0.0258	-0.0319	-0.0195	-0.0097	-0.0267	-0.0158	-0.0189	-0.0354	-0.0202	-0.0561	0.0592	-0.0734	-0.0339	-0.0704	-0.0928	-0.0863	-0.0858	-0.1530
±SE	0.0026	0.0115	0.0148	0.0175	0.0210	0.0260	0.0291	0.0334	0.0361	0.0392	0.0405	0.0406	0.0441	0.0465	0.0500	0.0523	0.0546	0.0590	0.1060
Prob. (Pr > F)	0.0874	0.0251	0.0316	0.2641	0.6452	0.3034	0.5872	0.5704	0.3259	0.6065	0.1665	0.1448	0.0964	0.4667	0.1595	0.0763	0.114	0.1467	0.1511

- **SEM is the standard error for means**
- **a, b, c were the differences between means tested by Duncan test.**

However, there was no significant difference in weaning weight at two months on Rahmani lambs due to lambing season (El-Fouly *et al., 1984*).; Mokhtar *et al*., (1991) on Barki at birth weights and at 4, 6 and 9 months of age; Megahed (1996); on Rahmani lambs among born in May-June and October at ages of 1, 2, 3 and 4 months on lambs.

From table 3, it could be noticed that, lambing season had significant effect (P<0.00l) on average daily gain weight of Saidi lambs at all different periods of age except the periods of 12-15 and 15-18th. A nearly similar result was reported by Hassan and El-Feel (1988). They observed that daily gain from birth to weaning was significantly affected by lambing season. Also, Oudah (2002) showed that the highly significant (P<0.00l) effect of season of birth on average daily gain for two period (Bw -3 months and >3-6 months of age) and non significant from birth to 6 months of age for Rahmani sheep. Also, Bermejo *et al*., (2010) found that season of year was affected (P<0.01) the daily weight gain and the lambs born in winter were lowest weights. However, season of lambing did not showed any effect on average daily gain at the period of 1- 8 weeks in Saidi lambs Doaa *et al*., (2009) and also, Abbas *et al*., (2010) found the same results at all studied periods except from 6 to 9 and from 9 to 12 months of age.

Table 3. Effect of lambing season, sex, birth type on average daily gain and estimate of inbreeding at different periods of Saidi lambs.

Season	gain BW - 3	gain >3 - 6	gain >6 - 9	gain >9 - 12	gain >12 - 15	gain >15 - 18
February	99.104	83.537	53.953	64.235	48.617	77.517
Jun	105.586	58.499	78.308	66.703	52.195	35.227
October	106.228	60.622	84.309	58.314	46.095	41.985
SEM	2.741	3.480	3.841	4.157	4.358	16.030
Prob. (Pr > F)	0.0001	0.0001	0.0001	0.0335	0.7214	0.0106
Sex						
Mal	106.548	79.012	90.917	79.468	58.881	62.024
Female	100.730	55.426	53.467	46.699	39.057	41.129
SEM	2.516	3.226	3.543	3.822	3.999	13.016
Prob. (Pr > F)	0.0022	0.0001	0.0001	0.0001	0.0001	0.0406
Birth type						
Single	117.406	76.138	69.803	56.547	54.053	57.867
Twin	99.482	68.684	67.129	62.253	53.856	51.908
Triple	94.030	56.835	79.644	70.451	38.998	44.955
SEM	3.197	4.045	4.459	4.764	4.971	15.854
Prob. (Pr > F)	0.0001	0.0018	0.3017	0.0836	0.3775	0.7463
Inbreeding effect	-0.169	-0.171	-0.300	-0.324	0.043	0.387
±SE	0.193	0.237	0.263	0.295	0.032	0.286
Prob. (Pr > F)	0.03789	0.4716	0.2543	0.2724	0.8917	0.7327

- **SEM is the standard error for means**

Table 4 showed that all weights at different periods affected significantly by lambing year. The differences in environment, feeding and grazing resources, may be contributed to the significant year effects. It is well known that environmental changes and climate affect the provision of food (Momoh *et al*., 2013). The effect of lambing year on weights may be due to differences in nutrition, management and hygiene in the various years (Baneh and Hafezian, 2009).

Table 4. Effect of lambing year on weights (kg) of Saidi lambs from birth until 18 months of age.

Year	BW	w1	w2	w3	w4	w5	w6	w7	w8	w9	w10	w11	w12	w13	w14	w15	w16	w17	w18
1995	2.21	6.82	9.65	12.58	14.84	16.15	16.77	19.57	20.35	23.69	25.19	25.50	27.27	29.96	30.95	31.66	30.94	30.78	34.28
1996	2.51	8.87	12.31	13.23	16.35	17.88	19.73	19.62	19.94	22.33	23.22	24.42	26.96	28.93	29.77	30.59	30.32	33.04	36.05
1997	2.52	4.34	7.87	10.38	12.97	13.18	13.90	16.36	19.12	20.88	21.91	25.02	25.83	26.81	25.85	27.06	29.57	30.89	32.37
1998	2.62	4.39	7.73	10.72	11.64	13.39	15.61	18.07	19.91	21.23	22.99	25.97	28.05	30.34	31.09	33.33	34.56	33.29	-----
1999	2.38	3.80	9.24	11.94	15.12	17.50	20.31	23.00	24.57	26.65	27.74	28.17	30.29	31.56	32.31	34.58	36.28	36.77	38.05
2000	2.81	6.72	9.19	12.68	15.41	17.91	21.04	24.00	26.56	27.46	28.17	28.45	29.98	32.49	32.72	33.11	34.02	34.70	-----
2001	2.80	7.37	9.87	12.02	14.89	17.10	19.43	22.99	24.58	26.96	29.42	30.63	31.32	31.91	33.07	33.19	34.24	33.86	38.23
2002	2.91	8.21	10.33	13.99	17.26	19.23	20.96	25.40	28.98	28.42	25.41	27.52	30.18	31.29	31.98	34.07	36.08	36.59	37.95
2003	2.02	5.48	9.01	12.53	13.03	14.71	17.85	19.39	21.21	23.31	25.21	25.78	29.22	30.19	30.98	31.98	32.95	32.59	30.98
2004	2.21	6.00	8.34	9.67	12.53	13.27	16.65	17.41	19.91	22.68	25.71	27.02	28.72	27.07	28.64	30.98	31.55	31.60	32.09
2005	2.50	6.61	9.81	10.72	11.90	13.76	14.79	16.29	18.08	17.98	20.42	21.61	23.56	22.86	24.56	26.41	25.49	28.13	27.82
2006	2.75	8.60	10.99	12.12	13.08	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SEM	0.06	0.26	0.33	0.39	0.46	0.57	0.63	0.72	0.78	0.84	0.83	0.84	0.89	0.92	0.99	1.05	1.20	1.53	2.07
Prob. (Pr>F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0211	0.0001

- **SEM is the standard error for means**

The previous finding results obtained by Oudah, (2002) that weights at 3 and 6 months of age were significantly affected ($P < 0.001$) by year of birth for Rahmani sheep. In this respect Mousa *et al* (2006) demonstrated significant effect ($P < 0.0001$) on weight at both birth and weaning of Farafra lambs. Lalit *et al*., (2016) recorded significant influence (P<0.01) on the birth, weaning, 6 and 12 months weights. In general, Kumar *et al*., (2017) indicated that effect lambing year was significant (P<0.01) for most of the growth traits (birth, weaning and weights at 6, 9 and 12 months) of Nellore lambs.

Results in table (5) indicated that the average daily gain of Saidi lambs affected significantly by lambing year at all periods studied form birth until 18 month of age. The same effect found by Oudah, (2002) for Rahmani sheep. Also, Abbas *et al*., (2010) found that the same highly significant effects of lambing year at pre-weaning periods on average daily gain. Lalit *et al*., (2016) found that average daily gain from birth to 3 and from 3 to 12 months was influenced by year of birth. In the present study there was no clearly trend observed for gain over the years.

Table 5. Effect of lambing year on average daily gain(gm) at different periods in saidi lambs.

Year	gain BW - 3	gain >3 - 6	gain >6 - 9	gain >9 - 12	gain >12 - 15	gain >15 - 18
1995	115.153	47.646	83.941	53.669	55.611	66.020
1996	118.729	67.766	36.023	59.772	66.098	64.163
1997	86.882	44.960	83.968	69.553	46.752	77.263
1998	89.881	56.080	71.864	77.541	52.274	0.000
1999	106.249	92.631	73.182	53.602	39.694	37.543
2000	109.524	92.371	81.040	49.906	52.988	0.000
2001	102.227	84.674	85.875	59.471	42.141	72.928
2002	122.745	77.057	96.478	54.619	64.383	63.866
2003	116.627	58.474	66.635	73.640	36.363	69.433
2004	82.152	72.847	65.586	74.098	42.444	14.969
2005	91.329	44.902	49.521	68.050	39.909	-1.998
2006	102.173	0.000	0.000	0.000	0.000	0.000
SEM	4.339	4.793	5.251	5.481	5.678	16.746
Prob. (Pr > F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0012

- **SEM is the standard error for means**

Table (2) showed that the weights of Saidi lambs at birth and monthly until 18th were significantly affected (P<0.0l) by sex. At birth and at all periods, males were significantly (P<0. 001) heavier than female lambs. The rate of skeletal development may be the reason of differences between both sexes in birth weights (Attalah 1988). Also the sex hormones may be playing a major role accelerating growth (Dixit *et al*., 2001).

The present results were similar to those obtained by Hassan (1993), who found that males of Ossimi and Saidi lambs were 0.16, 1.62, 2.34 and 8.05 kg significant (P<0.0l) heavier than females at birth, weaning, 6 and 12 months of age, respectively. Also, Sakr (2005) found that weight at 2 months affected significantly (P<0.05) by sex and had highly significant effect (P<0.0l) on the rest of weights at different periods for Romanov lambs, except weight at one month. Several workers observed the same effects in Iranian Baluchi sheep by Abbasi *et al*., (2012), Petrovic *et al*., (2011) on indigenous Serbian sheep, Roshanfekr *et al.,* (2011) on Arabi lambs and Mousa *et al*., (2010) on Farafra lambs.

Lalit *et al*., (2016) reported that sex of lamb had significant effect (P<0.01) on the birth, weaning, 6 and 12 months weights of Harnali sheep. At all age stages of growth males were significantly heavier than female lambs. Also, Kumar *et al*., (2017) noticed that male were heavier (P<0.01) than females lambs in Nellore lambs, and the differences were clearly with advancement of age, it may be due to more variation in the endocrine system of both the sexes (Swenson and Reece 1993). On the other studies, the influence of sex on birth weight was not significant in Barki lambs (Mokhtar *et al*., 1991) and Karakas lambs (Gokdal *et al*., 2005) and Saidi lambs (Doaa *et al*., 2009).

The average daily gain for Saidi lambs at all studied periods was affected (P<0.0l) by sex (Table 3). The male had higher average daily gain than female lambs. These results are in agreement with the results reported by Suliman (1994), Marzouk and Mousa (1998) and Hassan *et al*., (2001), they indicated that daily gain of male lambs (Ossimi, Chioss and its crosses) was significant higher than females during the first year of age.

The influences of type of birth on weights of lambs at all age were significant as shown in table (2), except weights at 15, 16 and 18th months. Single lambs tended to have heavier birth weight (2.88 kg) than twins (2.53 kg) or triplet (2.16 Kg).

The limited uterine space may be a reason of lower weights of twin and triplet lambs. The physiological compensatory mechanism may have played its role in influencing the faster growth rate to overcome the handicap during the pre-weaning period for achieving the physical and physiological maturity by the same time (Dixit *et al*., 2001). The same significant effect for birth weight was observed by Doaa *et al*., (2009). Also, Mousa *et al*., (2013) on Farafra lambs showed that the birth and weaning weight decline with the increase of litter size.

The effects of type of birth on average daily gain of lambs at all age are presented in Table 3. Results showed that the average daily gain of Saidi lambs at only the periods of Bw-3 and >3-6 months was influenced (P<0.001) by type of birth. These findings agree with those found by Rastogi (2001), Morsy, (2002) and Oudah, (2002). They showed that type of birth had highly significant (P<0.00l) effect on average daily gain for the periods from birth to 3 and from birth to 6 months of age.

Descriptive statistics for inbreeding estimate for lamb weights are shown in Table 2. There were no significant differences in body weights of Saidi lambs due to inbreeding except the weights of lambs at one and two months of age. The results showed that the effect of inbreeding was diminished as the lambs grew older although it had deleterious effects in early ages. Thus, the inbreeding effect on birth and two months weights was found to be significant (P< 0.001). The same results are found by Elshennawy and Raheem (2000) and Michelle (2003) also, Mackinnon *et al*., (2003) they evaluated the inbreeding value by using REML on lamb birth weight and it was found to be − 0.027 ± 0.023 kg as percent increase in inbreeding in crossbred lambs. Mandal *et al*., (2004) found that of average, increase of 1% individual inbreeding reflected in significantly (P<0.05) reduced lamb weights at birth, 3, 6, 9 and at 12 months by 0.010, 0.048, 0.075 , 0.129 and 0.112 kg, respectively.

Moreover, Alsheikh (2005) found that the level of inbreeding had a negative significant effect on birth weight of Barki lambs, while, it had no significant effect on weaning weight.

Effect of inbreeding on average daily gain of lambs were presented in Table 3. The results showed that the average daily gain of Saidi lambs only at the period of 0-3 months was influenced (P<0.001) by inbreeding. The results indicting that, in early ages inbreeding showed deleterious but the effect diminished as the lambs grew older.

In Rambouillet lambs Khan *et al*., (1995) found that increase in inbreeding level by one percent lead to decrease weaning weight by 0.01 ± 0.612 kg but this reduction in weaning weight was not significant

However, Vanli *et al*., (1985) noticed that inbreeding had significant effect on weaning weight and average daily gain and it was 74 and 38 percent respectively. Similarly, Wyk *et al*., (1993) found that the regressions of inbreeding on weaning weight and average daily gain were -0.099 and -0.0009, respectively (P<0.01) of Elsenburg Dormer sheep.

In spite of the differences observed in inbreeding effects found in the present examined herd and other studies might be due to variation in the level of inbreeding.

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تأثير بعض العوامل البيئية و التربية الداخلية علي بعض صفات النمو في الحملان الصعيدي.

فايق حسنى حسين فراج[1] ، حلمى رشاد مطاوع[2] ، ناظم عبدالرحمن شلبى[1] و أيمن صابر عبدالله[2].

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تم تحليل بيانات الأغنام الصعيدي بمحطة بحوث سدس التابعة لمعهد بحوث الإنتاج الحيواني التابع لوزارة الزراعة و استصلاح الأراضي خلال الفترة من 1995-2006 م و التي شملت 1644 سجلاً لأوزان الحملان ابتداء من الميلاد حتى عمر 18 شهراً. استخدمت طريقة المربعات الصغري(Least- Square) في تحليل البيانات. هدفت الدراسة تحديد تأثير العوامل البيئية (سنة الميلاد، فصل الولادة، جنس المولود و نوع الولادة) و التربية الداخلية على أوزان الحملان ومعدل الزيادة الوزنية اليومية في المراحل العمريه المختلفة. أظهرت النتائج أن كل الأوزان عند مراحل التطور العمرية المختلفة كانت تتأثر معنويا ($P< 0.001$) بكل من العوامل البيئية المدروسة باستثناء تأثير فصل الولادة في الوزن عند عمر 12 ,16, 17 و18 شهراً و نوع الولادة عند 15 ,16 و18 شهراً فكانت الفروق غير معنوية. عدم وجود تأثير معنوي للتربية الداخلية علي أوزان الحملان الصعيدي باستثناء أوزان الحملان عند عمر شهر وشهرين كانت تتأثر معنويا ($P< 0.001$) بالتربية الداخلية. كانت متوسطات الزيادة اليومية في الحملان عند مختلف الفترات العمريه تتأثر معنويا ($P< 0.001$) بفصل الولادة ، سنة الولادة و جنس الحمل باستثناء الفترة عند >12-15 شهر بالنسبة لفصل الولادة فكان الاختلاف غير معنوي. أظهرت النتائج أن متوسط الزيادة اليومية المكتسبة في الحملان عند الفترات من الميلاد إلى 3 اشهر ومن >3 - 6 أشهر كانت تتأثر معنويا ($P< 0.001$) بنوع الولادة. بينما كان لعامل التربية الداخلية تأثير معنوي ($P< 0.001$) علي متوسط الزيادة اليومية المكتسبة في الحملان في الفترة من الميلاد - 3 شهر فقط. و قد تبين من نتائج تلك الدراسة يجب أن تؤخذ العوامل الغير وراثية بعين الاعتبار أثناء تقييم الأداء لصفات النمو في الحملان الصعيدي لإعطاء فرصة لزيادة العائد الاقتصادي من عملية التربية.