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## Some Production Characteristics of Zom Sheep Types

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### ABSTRACT

This study was done to determine fertility, growth and body measurements in Zom sheep type reared in the vicinity of Diyarbakir. 96 Zom sheep and 107 lambs, born from them were used. Fecundity, fertility and twinning (%) were 1.11, 1.13 and 13.8%, respectively. Birth weight, 15th, 30th, 45th, 60th days at body weight and daily live weight gain from birth to 60 days age for Zom lambs were 4.75, 9.34, 12.85, 15.89, 18.70 kgs and 232 g, respectively. While dam age effective on birth weight, 15 and 30th day of body weight of lambs, gender was found significant on whole growth period from birth to 60 days of age and daily live weight gain ( $p < 0.05$ ). The average body size of Zom sheep were determined as these, respectively; withers height 72.89 cm, body length 75.05 cm, chest depth 34.97 cm, chest width 25.29 cm, chest circumference 105.42 cm, ear length 16.85 cm and front shin circumference 8.66 cm.

**Key words:** Zom sheep, fertility, growth, body measurements, survival

### INTRODUCTION

Farm animals have been selected in many years for productivity with progressive elimination of animals without considering traits that may need future (Anya and Ayuk, 2011). So, it has been lost in many genetic of resources regarding to special feature of animal. Many institutions as UNEP (United Nutritious Environmental Program), FAO (Food and Agricultural Organisation), EAAP (European Association of Animal Production) have shown interest to this topic, which is drastically reduce in number of native breeds and extinction of breeds (Tuna *et al.*, 2004). In Turkey, it is known that there are losses in genetic resources of farm animals. This situation is a result of rapid replacing of domestic breeds by higher efficient breeds due to the fact that efficiency increase is necessary in various levels of economic, social, environmental developments and breeds of higher efficiency can be grown by less input. This process is currently underway and losses occur in several genotypes of several breeds. However, the indigenous breeds have adapted to the conditions of the region they were grown; quite resistant to adverse environmental conditions and diseases. Yields are low, but due to their durable and special qualifications may be efficient in inadequate conditions (Ertugrul *et al.*, 2010). Rare farm livestock represent a genetic resource which may carry genes of potential future economic value (Hall and Henderson, 1999). The disappearance of domestic breeds means perishing of their specialties. It is impossible to predict which of those features will be needed in the future. Also undetermined features of these genetic resources will be protected if domestic breeds can last their existences.

The first stage in determining the genetic resources which will be protected is to obtain genotypes and presence of these genotypes. Following stage is formed by determining all the features of present genotypes (Ertugrul *et al.*, 2010). Sheep and goat are especially beneficial for the livelihood of farmers that including family farms with limited resources where the availability of land and fodder is insufficient in the world. Sheep breeding has several economic advantages compared with other branches of animal husbandry because of the fact that it is very good economic converter of plant to animal production. There is no substitute for sheep as livestock for utilizing waste, poor meadows, stubble, fallowing, fodder resources high in crude fibre, tree, farm wastes or weeds (Kaymakci *et al.*, 2001; Koc and Ceylan, 2009; Banerjee *et al.*, 2010; Chukwuka *et al.*, 2010; Al-Atiyat *et al.*, 2012).

Sheep breeding in Turkey is principally based on indigenous breeds and the most widespread from of extensive animal husbandry systems. These breeds are more resistant to disease and parasites while also being able to survive even in unfavorable environments and to maintain their productivity (Kaymakci *et al.*, 2001; Soysal *et al.*, 2005; Cam *et al.*, 2010a).

From the points mentioned above it can be said that genetic resources of farm animals should be protected. Also determining the breeds which will be protected, present situation of animal genetic resources in Turkey, the problems which are faced in protecting the genetic resources, the efforts on protection and measures which should be taken on this subject should be studied (Ertugrul *et al.*, 2009).

According to our research and communication with breeders, Zom sheep is a local type of Akkaraman breed which is grown in Karacadag region of Diyarbakir city. It is known that first of all it has been grown by Beritan clan. Then the breeders from Karacadag region took brood Zom sheep from Beritan clan and they grew mainly these sheep. Zom sheep is one of the best suited breed according to bad vegetation and climate conditions of Karacadag region. They have higher resistance to long-term movements and illnesses. Besides they have higher offspring efficiency and stamina.

This study has been done to determine fertility, growth and body measurements in Zom sheep type reared in the vicinity of Diyarbakir.

## **MATERIALS AND METHODS**

The study was performed on total 96 Zom sheep and 107 lambs which were born from them. The data were collected from rural farms of Beritan clan in Diyarbakir at 2010. The farms are located at lat 37°54'39"N, long 40°14'12"E and 660 m altitude and annual average precipitation is 496 mm.

Lambs were kept with their mothers during all the time of 1-2 days after they had been born. Then they were separated and lactated two times in day as in morning and evening. They were familiarized to coarse and concentrated feed after 20 days. Their weights were measured by a scale, sensitive to 50 g within 12 h after they were born. Also weight values belong to growing period of them were determined by interpolation method.

Least squares method was used to obtain the factors and their degrees which affected the born weight and living weight grades of lambs (Duncan, 1955; Harvey, 1982). Importance controls of effects of these investigated factors on features were obtained by contrast test.

Stamina of lambs was calculated as a ratio of number of live male and female lambs on the 60th day versus number of live births. Several measures such as withers height, ridge height, size length, chest depth, chest circumference and front shin circumference were obtained (Cam *et al.*, 2010b). Their size measures were defined by using caliper and tape measure.

All the statistical analysis was done by using SPSS software. General linear model was used in the analysis of the features belong to growing period whereas Crosstab-chi-square test was used in the analysis of stamina (Gupta, 1999; Leech *et al.*, 2005).

**RESULTS AND DISCUSSION**

Number of the born lambs per fecundity, number of born lamb per giving birth and twin ratio were 1.11, 1.13 and 13.8%, respectively (Table 1). These values were found lower than the findings of some studies (Karakus and Cengiz, 2007) and higher than the values of several researches (Gokdal *et al.*, 2000; Ulker *et al.*, 2004) done for Akkaraman or several varieties of it. It may be said that The values determined for these properties are compatible with Akkaraman breed.

In terms of survival, 15, 30, 45 and 60th days values were 99, 98, 97 and 95%, respectively (Table 2). The difference between the groups in terms of survival was not significant for all periods. This feature is similar in terms of results of studies conducted previously in sheep Akkaraman (Unal, 2002).

Also average birth, 15th day, 30th day, 45th day, 60th day living masses and living mass increase till 60th day in lambs were 4.75, 9.34, 12.85, 15.89, 18.70 kgs and 232 g, respectively (Table 3).

Significant difference was found between the gender groups for all periods of growth and differences in terms of type of birth was important for the birth and 15th day. The difference between groups in terms of maternal age is also has continued until 30th day. The gender groups (p<0.01; p<0.05; p<0.05; p<0.01; p<0.01; p<0.05 for birth, 15th day, 30th day, 45th day, 60th day living masses and living mass increase till 60th day periods, respectively), birth type (p<0.01; p<0.05 for birth, 15th day periods, respectively) and maternal age (p<0.05; p<0.05; p<0.05 for birth, 15th day, 30th day periods, respectively) were significant.

Table 1: Fecundity, litter size and twinning rates of Zom sheep

Pregnant sheep	Sheep giving birth	Fecundity	Litter size	Twinning rates (%)
96	94	1.11	1.13	13.8

Table 2: Survival rates in different periods of the lambs (%)

Factors	Lambs born	15th day			30th day			45th day			60th day		
		No.	%	$\chi^2$	No.	%	$\chi^2$	No.	%	$\chi^2$	No.	%	$\chi^2$
Sex				0.954			1.927			2.918			4.959
Male	52	52	100		52	100		52	100		52	100	
Female	55	54	98		53	96		52	94		50	90	
Birth type				0.324			0.732			0.137			0.703
Single	81	80	98		80	98		79	97		78	96	
Twin	26	26	100		25	96		25	96		24	92	
Maternal age				2.167			1.445			2.496			0.891
2	29	29	100		28	96		28	96		28	96	
3	34	33	97		33	97		32	94		32	94	
4	33	33	100		33	100		33	100		31	93	
5	11	11	100		11	100		11	100		11	100	
Total	107	106	99		105	98		104	97		102	95	

$\chi^2$ : The value of crosstab-chi-square

Table 3: Least-square means (LSM) and standard errors (SE) of the live weights and daily live weight gain (DLWG) of the Zom lambs at different ages (g)

Factors	Birth			15th day			30th day			45th day			60th day			DLWG		
	No.	LSM	SE	No.	LSM	SE	No.	LSM	SE	No.	LSM	SE	No.	LSM	SE	No.	LSM	SE
Expected mean	107	4751	59	106	9340	170	105	12857	207	104	15895	234	102	18700	248	102	232	4
Sex	**			*			*			**			**			*		
Male	52	5003	78	52	9650	224	52	13176	270	52	16432	305	52	19351	320	52	239	5
Female	55	4499	75	54	9030	216	53	12539	264	52	15359	301	50	18050	320	50	225	5
Birth type	**			*			NS			NS			NS			NS		
single	81	4927	61	80	9691	174	80	13193	210	79	16308	238	78	19175	251	78	237	4
Twin	26	4574	100	26	8988	285	25	12522	350	25	15483	395	24	18226	421	24	227	6
Maternal age	*			*			*			NS			NS			NS		
2	29	4870	96 <sup>a</sup>	29	9107	274 <sup>ab</sup>	28	12712	339 <sup>ab</sup>	28	15679	383	28	18252	402	28	223	6
3	34	4852	97 <sup>a</sup>	33	9718	281 <sup>a</sup>	33	13474	340 <sup>a</sup>	32	16253	389	32	18991	409	32	235	6
4	33	4870	88 <sup>a</sup>	33	9890	251 <sup>a</sup>	33	13447	302 <sup>a</sup>	33	16148	342	31	19151	369	31	237	6
5	11	4411	149 <sup>b</sup>	11	8644	426 <sup>b</sup>	11	11798	512 <sup>b</sup>	11	15503	579	11	18408	607	11	233	9

The differences between the means of groups marked by various letters in the same column are significant, NS: Non significant at p>0.05, \*p<0.05, \*\*p<0.01

Table 4: The mean body sizes (M) and standard errors (SE) of the Zom sheep (cm)

Age	Height at withers			Body length			Hearth width			Hearth depth			Hearth girth			Front shin girth		
	No.	M	SE	No.	M	SE	No.	M	SE	No.	M	SE	No.	M	SE	No.	M	SE
Age	NS			*			NS			NS			NS			NS		
2	25	73.5	0.4	25	75.6	0.6 <sup>ab</sup>	25	24.7	0.3	25	34.4	0.2	25	104.1	0.9	25	8.5	0.08
3	32	72.8	0.5	32	75.0	0.6 <sup>b</sup>	32	25.2	0.3	32	35.1	0.2	32	106.1	1.0	32	8.6	0.07
4	26	72.0	0.6	26	73.5	0.8 <sup>b</sup>	26	25.5	0.3	26	35.1	0.2	26	105.1	0.5	26	8.8	0.07
5	9	73.5	1.2	9	78.1	1.9 <sup>a</sup>	9	26.2	0.5	9	35.1	0.5	9	107.0	2.3	9	8.8	0.11
General	92	72.8	0.3	92	75.0	0.4	92	25.2	0.1	92	34.9	0.1	92	105.4	0.5	92	8.6	0.04

The differences between the means of groups marked by various letters in the same column are significant, NS: Non significant at p>0.05, \*p<0.05

The values were found to be higher than many studies done before from the viewpoint of growing features (Esen and Yildiz, 2000; Ozbey and Akcan, 2001; Gokdal *et al.*, 2006). It can be easy said that Zom sheep type is superior than Akkaraman sheep breed in point of growth and meat traits.

Withers height, body length, chest width, chest depth, chest circumference and front shin circumference were 72.89, 75.05, 25.29, 34.97, 105.42 and 8.66 cm, respectively (Table 4). Significant difference was found between the groups in terms of body length (p<0.05). The body dimensions of the Zom sheep were found as quite higher than the findings of other researchers (Gokdal *et al.*, 2000; Esen and Yildiz, 2000; Yildiz and Denk, 2006).

Domestic sheep breeds should be protected in natural life environment with infrastructure features in order to protect the gen resources.

In this study, growing and body dimension values of Zom sheep, which were bred in Karacadag region of Diyarbakir city and under the threat of vanishing from the viewpoint of genetic source have been investigated. Also it was considered that these values exhibit superiorities when they were compared with the findings obtained in the researches, done on the other domestic breeds.

But, small number of animals used in the study so it makes difficult to obtain reliable estimates performance of animals. This study could be baseline for future work. Therefore, larger scale and more detailed experiments are needed to confirm the results on characteristics of Zom sheep under different farm conditions.

## CONCLUSIONS

In conclusion, Zom sheep has been suited to the Karacadag localization very well for genetic improvement of animal husbandry and it forms an important potential because of the fact that it is a qualified sheep breed from the viewpoint of efficiency features.

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