Heritability Estimates for Some Growth Traits of Dhatti Camel Breed in Tharparkar

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Abstract: Purposed study was conducted using 12 sire"s 232 offspring. The parameters were studied birth weight, body weight, weight at 6 month, average daily gain to 6 month, yearling weight, total weight gain from 6 month and average daily gain from 6 month till one year. The results for heritability estimates were analyzed using the variance with unequal subclass numbers by using the data of 12 parental half sib groups. The average numbers of offspring were ranged per sire 3 to 84 with mean of 16.4. The effect of sire was observed significantly higher (P≤.0) in said traits. While the results of heritability estimates were observed low to moderate for birth weight, birth weight at 6 month, average daily gain to 6 month, yearling weight, total weight, weight gain to 6 month and average daily gain from six month to 1 year respectively. The results for correlation estimates between these traits were positive and high for bwt with TG6 month and bwt at 6 month with and 6 month to 1 year. It is concluded that values for heritability and correlation were observed in range of other farm animal, while for the better production and higher values selection process is advisable for these traits.

Keywords: Heritability, Growth traits, Correlation, Dhatti camel.

INTRODUCTION

The camel plays a greater part in the livelihood of poor people by serving for million numbers of poor peoples in mountainous arid, desert and semi-arid areas of Pakistan [1]. Camel is known as symbol of status in large areas of Pakistan by providing milk, meat, hairs, hides, wool and transportation. Nowadays there is great demand to recognize the importance of camel breeds due to changing the world scenario and to improve the niche properly that could harbor this better species. There are four distinct breeds of camel Dhatti, Kharai, Sakrai and Larry. Dhatti breed of camel in commonly found in Dhatt district of Tharparkar, Umarkot, Mirpurkhas, Sanghar and Badin. This bred has efficiency to well adapt harsh environment and travel fast on sandy soil. Dhatti is desert camel with slim body long legs small head [2]. Heritability is known as the proportion of observed or phenotypic variance due to different in additive genetic variance among the individual in particular population. Heritability is important tool through breeder could evaluate the effectiveness of selection process for growth traits. The estimation of heritability is important observe that how to analyzed the record of parent animals for expecting required merits of their progeny [3, 4]. Due to lack availability of the information regarding growth traits of camel, present study was designed to estimates heritability for growth traits of Dhatti camel breed.

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MATERIAL AND METHODS

A survey was conducted during the year of 2016 surrounding the Tharparkar district of Sindh. Total 12 sires 232 offspring's data was collected during the poor grazing conditions on especially designed proformaparameter including birth weight, body weight at 6 month, average daily gain to six month, yearling weight, total gain after 6 month and average daily gain form 6 month to 1 year. The collected data were maintained and brought at the Department of Animal Breeding and Genetics, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University, Tandojam for the estimation of heritability for growth traits of Dhatti camel breed. The analysis of variance with unequal subclass number and heritability estimates were analyzed using the formula as suggested by [5].

RESULTS AND DISCUSSION

In this study overall mean, standard deviations, ranges and coefficient of the variation are described in (Table **1**). The mean values are 32.1±02, 149.1.3±1.7, 545.1±149.4, 114.1±37.6. 57.1±22.4 and 131.1±119.2 for birth weight average daily gain to 6 month, yearling weight, total weight gain after 6 month and average daily gain 6 month to 1 year, respectively. The correlation standard deviation range showed large correlated variation in growth traits. The correlation coefficient ranged from 12% to 44% for average daily gain 6 month to 1 year showed variation in among

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Table 1: Mean Standard Deviation Coefficient of Variation and their Ranges for Growth Traits of Dhatti Camel

Trait	Mean± SE	Range	PSD	C.V.%
Birth weight kg	37.1±0.1	24-45	4.5	12
Birth weight at 6 month kg	151±2.1	76-224	29.3	20
Average daily gain to 6 month (gm)	612.1 ±151.5	275-995	155.7	23.3
Yearling weight kg	211.2±37.1	110-311	50.1	23.2
Total gain 6 month kg	57. 1±22.5	15-123	24.7	42.5
Average daily gain 6 month to 1 year (gm)	331. ±119.1	33-636	144.7	43

PSD is phenotypic variance.
The results for heritability estimates for growth traits are presented in (Table **2**).

different growth traits. The effect of sire was observed significantly higher (P≤.0) represented real variation among sires of weighted animals.

The heritability estimates were 0.34±22, 0.93±20, 0.76±40, 0.82±20, 0.78±41 and 0.8±45 for birth weight, birth weight at 6 month, average daily gain to 6 month, yearling weight, total weight, weight gain to 6 month and average daily gain from six month to 1 year respectively. The results for heritability estimates of current study are in agreement with the results of [6, 7], who had reported moderate heritable values for beef cattle and sheep. The findings of [8, 9] are in agreements with the findings of current research; they have reported moderate values for heritability estimates in Nellore and USA Beef cattle. The results of heritability for older weight such as yearling weight and average daily gain 6 month to 1 year were observed high and comparable with the tendency of above said different species. Mention results of heritability estimates are inflated to above mention limits and probably these values are reflecting the partial effect of sire and may be showing negative environmental effect in the data which will be maintain for better modeling and methods of analysis with collection of further data. The values of heritability estimates for birth weight to 6 month were found lower as compared to other growing traits as described by coefficient of additive genetic variation in (Table **2**).

It is real fact that growth traits are more likely to be dependent on dams and little bit affected by the trends of environment. They show mother performance and showed a best procedure for the selection of female animals. However the yearling weight and average daily weight gain less affected by mother and can be consider as selection criteria of male animals. In this study correlation estimates were observed positive and high birth weight at 6 month and yearling weight, birth weight at 6 month and total gain after 6 month and between birth weight at 6 month and later weight. Similar statement has been described by [10-12], reported high association between growth traits of Nellor, Hereford and Canchim cattle, respectively. They reported that birth weight and yearling weight are highly associated with each other; researcher reported that birth and yearling can be considered as important tool for the selection of male parents. Details of correlation results are presented in Table **3**.

CONCLUSION

It is concluded that higher amount of variation was observed in growth traits of Dhatti camel breeds, while

Table 2: Sire Mean Square, Heritability h^2 and Coefficient of Additive Genetic Variation Measures for Growth Traits

Trait	Sire MS	h^2 ±SE	AGSD	PSD	CAGV%
Birth weight kg	41. 2	0.34±22	2.4	4.1	6.9
Birth weight at 6 month kg	2466	0.93±24	19.1	30.3	12.5
Average daily gain to 6 month	54789	0.76±43	85	167	12.3
Yearling weight kg	11568	0.82±22	48.5	45.8	21.3
Total gain 6 month kg	1664.3	0.78±41	15.5	23.4	26.6
Average daily gain 6 month to 1 year gm	12773.5	0.8±45	163.7	144.3	25.1

P≤.01 Additive genetic standard deviation (AGS), phenotypic standard deviation (PSD), Coefficient of additive genetic variation (CAGV).

Table 3: Correlation Estimates between Growth Traits of Dhatti Camel

Trait	Birth weight kg	Birth weight at 6 month kg	Average daily gain to 6 month gm	Yearling weight kg	Total gain 6 month kg	Average daily gain 6 month to 1 year gm
Birth weight kg	.9	.39	.29	.33	.04	.12
Birth weight at 6 month kg		.9	.94	.75	.32	.23
Average daily gain to 6 month gm			.9	.75	.32	.21
Yearling weight kg				.9	.72	.75
Total gain 6 month kg					.9	.86
Average daily gain 6 month to 1 year gm						.9

results of heritability and correlation were ranged moderate, it is suggested that further improvement can be achieved by the selection on the bases of growth traits.

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