



Study of Production Parameters in Extensive kept Marecha Dromedary Camel at Desert Thal

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Abstract | This study was planned with the aim to investigate different production parameters of Marecha dromedary calves along with different management practices under extensive management system (EMS). About 100 camel herders were selected from Tahsil Mankera District Bhakkar (Desert Thal) for this study. The camel calves with their dams were kept under EMS for this study. The birth weight was taken at the birth by the use of digital scale, then weaning weights while growth rate was measured by taking the measurements at fortnight intervals. The Average Daily Gain (ADG) was calculated by the current weight-previous weight/15. Calves in the EMS in addition of suckling their respective dams received supplementation diets (grains and household refusals). Water was provided *adlib* twice a day. Calves were dewormed against parasites while fortnightly spraying was done against the external parasites. The birth weight and range were observed as 37.96±0.55, 32.39±0.22 and 35-50, 30-35 kg, respectively for male and female calves. The weaning weight and range were found as 254.13±6.76, 214.7±5.10 and 180-350, 173-239 kg, respectively while growth rate and range were 0.54±0.08, 0.46±0.01 and 0.4-0.7, 0.4-0.57 kg, respectively for male and female calves. Colostrum feeding was only observed in 14% calves as there was a taboo of calves being not fed until their dams have not passed the placenta. 100% calves were allowed to feed two teats of their dams for suckling while in 90% cases the time of suckling was restricted. Age of weaning was 7-12 months in 32% while 12-16 months in 68% calves. Only 12% people were found to practice deworming while calf mortality was observed in 24% cases and that is a major issue found in camel production under EMS.

Keywords | Camel, Birth Weight, Growth Rate, Desert, Management system

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INTRODUCTION

Livestock sector is dominated by landless, small and rural poor which is a source of employment, daily cash income, food security and reduces the income variability at the time of crop failure. It plays a pivotal role by uplifting socio-economics conditions of rural people in poverty

alleviation (Faraz et al., 2019a). Camel; an indigenous genetic resource of livestock is the key meat source for arid, semi-arid and pastoral areas (Faraz et al., 2019b). Normally the camels are kept under extensive conditions by pastoralists who are constantly moving in search of feed resources (Omer et al., 2008; Faraz et al., 2019c). The camel plays an indispensable role in pastoral ecology and its unique

characteristics under hostile environment are applaudable. Pakistan is 5th largest country of world regarding population, so definitely challenged with food security. Face to exploding population; the dependence on external food supply should be mitigated while the strategic idea is exploring own indigenous species those have not exploited yet (Faraz et al., 2019d). Pakistan ranks 8th among top ten camel raising countries in the world having 1.1 million heads (GOP, 2019-20; FAOSTAT, 2019). Mostly they are reared in pastoral keeping in Thal, Cholistan and Thar deserts.

Under natural melius the productive traits are to explore for developing the country primary database which not only quench the thirst of researcher community but also go a long way to reconnoiter novel and unmapped areas to provide solid recommendations for camel farming community. So, develop a database for production parameters this research information is vital. Hence, this study was planned with the objective to get basic information regarding camel productivity traits under extensive management system (EMS).

MATERIALS AND METHODS

METEOROLOGICAL CONDITIONS OF STUDY AREA

The Desert Thal is classified as zone III of agro-ecological region having arid climate, with highest temperature as 45.6 °C falling from 5.5 to 1.3 °C in severe winter. The rainfall is increasing from south to north and ranges between 150 to 350 mm (Rahim et al., 2011).

DATA COLLECTION

A total of 100 camel pastoralists were selected using a purposive sampling technique. The birth weight and weaning weight was taken by using a digital weighing scale (Impressum, Pakistan). Fortnightly weighing was performed to record average daily gain (ADG) which was calculated as current weight-previous weight/15. The criteria described by the International Livestock Center for Africa (ILCA) was used to rank the major contributions of dromedary calves from herds involved in the study (ILCA, 1990). Descriptive statistics for certain parameters was attained by SPSS (Steel et al., 1997).

RESULTS AND DISCUSSION

BIRTH WEIGHT

Mean birth weight and range of male and female calves were found to be 37.96±0.55, 32.39±0.22 and 35-50, 30-35 kg, respectively (Table 1). Wilson, (1978) postulated the same results about dromedary camel (35 kg) while Bissa et al. (2000) reported as (39 kg) in dromedary calves of India. The birth weights varied within breeds, animals and regions,

Khanna et al. (2004) reported 42.15±0.77, 38.82±0.64 kg respectively in male and female Indian Bikaneri dromedary calves. Kadim et al. (2008) reviewed the literature data and confirmed 35 kg birth weight in dromedary calves. In opposite to; Field (1979), Simpkin (1983), Ouda (1995) and Hammadi et al. (2001) reported range as 26-28 kg in Somali and Tunisian camel calves while a minimum sex influence on birth weight was reported in dromedary calves (Ouda, 1995).

WEANING WEIGHT

ADG (growth rate) in animals is mainly influenced by various factors like breed, sex, nutrition, physiological state and health. The chief is the heredity; that affects the prenatal growth directly through fetus or indirectly through dam genotype (Shalash, 1988). Pre and post weaning growth rates significantly affect the ultimate body weights in camels. According to Babiker and Tibin, (1989) the main factors including rearing system, milk availability and husbandry practices affect the pre and post weaning growth rates in camel calves at large and vegetative species partially throughout the year (Wilson, 1998).

High calf mortality and lower ADG are the major constraints in dromedary production (Ismail, 1990). The growth of calves and onset of puberty mainly affected by decreased nutrient intake (Formigoni et al., 1996). The intrinsic growth ability is chiefly governed by genetics and supplemented with nutrition and management (Khan and Iqbal, 2001) while the camels grow better in age of 1-3 years (Simpkin, 1985).

Mean weaning weight and range were found to be 254±6.76, 214±5.10 and 180-350, 173-239 kg, respectively of male and female calves (Table 1). Opposite to these, birth weight was reported as 37.5 kg for male and female calves in Kenya, while weaning weight was found to be 212±3.8 and 204±3.6 kg respectively for male and female where weaning age was 14 months (Musavaya, 2003). While Chibsa et al. (2014) documented the fact that after weaning at 8 months age and supplementing with concentrates resulted in good post weaning growth in Ethiopian dromedary calves.

GROWTH RATE

Average daily gain and range of male and female camel calves were found to be 0.54±0.08, 0.46±0.01 and 0.4-0.70, 0.4-0.57 kg (Table 1). Tandon et al. (1988) stated 400 (1-12 months) and 720 (7-8 years) g/d ADG in Bikaneri dromedary camels. In 1977, Knoess reported 1.4 and 0.95 kg ADG in male and female Pakistani dromedary calves while Qureshi, (1986) confirmed 1.5 and 1.0 kg in male and female calves, respectively. While in contrast with these results, Kamoun (1995) postulated ADG of 260 g/d

in camel calves fed on mangroves and 550 g/d in fed on high energy-protein diets. According to Field (1979) the calves gained 222 g ADG in traditional system (6 months, dry season) and 655 g/d (wet season) in Kenya. The ADG was found to be 410 and 380 g respectively in males and females while 120 and 60 g in males and females, respectively after sexual maturity which becomes 0 after attaining adult weight (Musavaya, 2003). Khanna et al. (2004) stated ADG as 700 and 770 g respectively in Jaisalmeri and Bikaneri Indian dromedary calves in 0-3 months. Reported ADG was to be 580 g during birth-90 days age (Hammadi et al., 2001) while 733 g/d birth-180 days in Indian dromedary calves (Bissa, 1996).

Table 1: Productive parameters and husbandry practices of Marecha calves in Mankera Tahsil of District Bhakkar, Punjab

Parameters	Mean/Percent	Range
Birth weight (♂) kg	37.96±0.55	35-50
Birth weight (♀) kg	32.39±0.22	30-35
Colostrum feeding	14%	----
No. of teats allowed to suckle	2 in 100% calves	----
Time of suckling allowed	90% (restricted)	10% (anytime)
Age of weaning (months)	32% in 7-12 months	68% in 12-16 months
Weight at weaning (♂) kg	254.13±6.76	180-350
Weight at weaning (♀) kg	214.7±5.10	173-239
Growth rate (♂) kg	0.54±0.08	0.4-0.70
Growth rate (♀) kg	0.46±0.01	0.4-0.57
Deworming	12%	----
Mortality	24%	----

ADG in camel calves were ranged as 720-860 g which is affected by restricted milk feeding and high ambient temperature (Zelege and Bekele, 2001). Kadim et al. (2008) reported ADG as 500 g in dromedary calves. Sahani et al. (1998) reported ADG as 630, 580; 640, 620; 370, 390; 230, 230; 160, 200; 160, 170 and 180, 140 g at 0-90, 90-180, 180-270, 270-265, 540-720, 720-900 and 900-1080 days respectively in male and female calves. Sex and year affect the most while male calves weighed heavier than females (Baniwal and Chaudhary, 1983). Reported ADG was to be 870 and 570 g during birth-30 days and birth-180 days respectively under proper nutritional conditions in Kenya (Wilson, 1992) while ADG was 830 to 970 g during birth-180 days in Egyptian dromedary calves (El-Badawi, 1996).

Bhakat et al. (2008) reported ADG as 611 g in intensive

management system and 319 g in semi-intensive management system respectively in Indian dromedary calves. In another study, Bakheit et al. (2012) reported mean daily weight gain as 535±9.83 and 317±5.46 g under semi-intensive and traditional management systems, respectively in Sudanese dromedary calves. Eltahir et al. (2011) reported ADG as 620 and 610 g in camels fed molasses and sorghum-grain-based diets, respectively. In different study, Mohamedain et al. (2015) stated ADG as 800 g in zero browsing group having supplementation as compared to 350 g in free browsing group with no supplementation in Sudan.

In recent studies, Faraz et al. (2018) compared the intensive system of management (IMS) with semi-intensive system (SIMS) regarding growth rate of Marecha camel calves and found higher growth rate about 674 g/d in male calves of 11-12 months age reared under IMS and 419 g/d in SIMS. In another study, in Marecha camel calves of 11-12 months age reported values are 397 g/d in SIMS and 539 g/d in extensive system by Faraz et al. (2017). In 2019e, Faraz & coworkers compared the growth performance and hair mineral status of Marecha calves of 11-12 months age in different management systems and found significant increase in the average daily gain of male and female calves being higher in intensive system than semi-intensive system. Faye et al. (2018) studied the growth in 36 months old intact dromedary camels as affected by feeding of date-urea blocks and documented 509 g ADG 509 in control while 414 g in experimental group. Recently, Faraz et al. (2020) compared the growth rate of Marecha calves in open grazing/browsing (OGS) and stall-fed system (SFS) and reported very close results of DWG as 0.48 and 0.52 kg/d in OGS and SFS, respectively. The values of ADG of male and female weaned dromedary calves around 1-year age were found to be 670, 650 and 540, 440 reared under intensive and extensive feeding systems, respectively (Faraz, 2020).

HUSBANDRY PRACTICES

Fourteen percent calves were found to be suckled colostrum only, as there was a taboo of calves being not fed until their dams have not passed the placenta. Even people don't know that prompt milking after calving supports the passage out of placenta. All calves were offered two teats for suckling as people have problem of handling and collection of milk so the main purpose is to evacuate the udder of dam. So, people give two teats permanently to the calf, either it is male or female calf while the remaining two are used for household consumption. Restricted time was given to almost 90 % of calves for suckling so that less hurdle is faced by the dam during grazing/browsing. Commonly people do weaning in camels after one year because of the mere trend of commercialization of camel dairying

in remote areas. The weaning age is longer than average in camels, only 32 % calves were weaned in 12 months while rest 68 % were weaned after twelve months of age. There was no observed trend of vaccination and medication in Thal area, probably due to the lack of veterinary facilities and extension services. Mainly people rely on ethno-veterinary practices and deworming was practiced in 12 % calves only. There was high calf mortality ratio of about 24 % and the main contributory factor was of traditional camel husbandry.

CONCLUSION

Reasonable gains were observed in Marecha dromedary calves under extensive conditions that is a clear indication of the potential of Pakistani camel. This could be triggered by adopting modern husbandry practices. The second largest desert of Punjab is Thal enriched with indigenous genetic resource and considered as future food basket. Marecha is the most favorite breed of camel reared with multi-functional properties like food animal, riding, dancing and aesthetic preference. Many socio-economic and anthropological factors influence its utility in study area. Extension services about management, feeding, breeding, clean water therapy and treatment should be provided to the herders for proper camel production in desert area.

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CONFLICT OF INTEREST

There is no conflict of interest.

AUTHORS CONTRIBUTIONS

All authors contributed equally to the research objectives' fulfillment and data presentation. Asim Faraz designed the protocols and conducted field research, Muhammad Younas supervised the field works, Muhammad Shahid Nabeel and Naeem Ullah Khan gave practical support when conducting field research, Abdul Waheed analyzed the data, Nasir Ali Tauqir helped in writing the article.

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