



Short Communication

Productive Parameters and Physical Characteristics of Crossbred Thalli Sheep × Mundri Ram

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ABSTRACT

The purpose of experiment was to increase the fecundity such as twinning and triplitting, to attain increase in birth weight as well as weaning weight and to improve physical characteristics especially the ear size. For this Thalli female sheep (n=26) was crossed with Thalli Ram (for control) and Thalli female sheep (n=26) crossed with Mundri Ram (for experimental group). Regarding fecundity, the single birth, twinning and triplitting was 42, 58, 0 for control and 27, 65, 8 % for experimental group. The birth weight achieved was 5.5, 5.0 and 6.5, 5.5 kg for male suckler and female suckler in control and experimental group, respectively. The weaning weight attained was 28 (control) and 32 kg (experimental) for female sucklers while male sucklers of both groups were sold before weaning. Regarding physical characteristics, the control group was of black mouth, long big black ears and white body color while the experimental group was of white mouth and some having black eye circle, short small white ears.

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Authors' Contributions

MSN conducted research trial. AR supervised the trial. AF wrote the paper.

Key words

Sheep, Growth, Weaning weight, Cross breeding, Desert.

There are about 31.2 million heads sheep in Pakistan (GoP, 2019-2020) which becomes an important economic activity under small-holder farmers for food security and sovereignty in all parts of country. Mostly the indigenous sheep are reared under traditional management system for subsistence production as means of obtaining meat, manure and cash (Hassen *et al.*, 2004). They are a source of risk mitigation during crop failure, of monetary saving and investment in addition to many of other socio-economic and cultural functions (Tibbo, 2006). In developing countries sheep raising has increased due to good adaptation to poor feeding conditions; that's why this is becoming important branch of domestic industry (Odabasogluo *et al.*, 2009). So, the crossbreeding programs are designed with aim to increase livestock production through the use of genetic potential of breeds and heterosis effects from their crossbreds on important economic traits (Lupton *et al.*, 2004).

Crossbreeding is mating of individuals from different breeds to attain primary benefits like heterosis and breed complementarity. On average the crossbred lambs are more vigorous and have a higher survivability than purebred;

having faster preweaning growth rate. The F1 (first cross) crossbred ewe exceeds the straightbred ewe in many traits, especially those related to reproductive fitness and longevity (Aaron, 2014). The objective of present study was to increase the productive and reproductive parameters of sheep crossbred (Thalli × Mundri).

Materials and methods

A cross of Thalli female sheep with Mundri Ram was conducted at Camel Breeding and Research Station (CBRS) Rakh-Mahni during the year 2017-18. For control experiment Thalli female sheep (n=26) were crossed with Thalli Ram while for experimental group Thalli female sheep (n=26) were crossed with Mundri Ram. One Thalli and One Mundri Ram was used for breeding of females.

All animals were tagged on ear at time of birth. They were allowed to graze in the morning with shepherd on daily basis and then to fodder crops like *Lucerne*, *Jai*, *Jawar*, *Sarsoon*, *Bajra* and *Gawara* available according to the sowing season. The forage species available for grazing were *Tamarix aphylla*, *Cenchrus ciliaris*, *Suaeda fruticosa*, *Cymbopogon schoenanthus*, *Kochia indica*, *Capparis spinosa*, *Haloxylon salicornicum*, *Calligonum polygonoides*, *Capparis decidua* and *Haloxylon recurvum*. Animals were offered concentrate (0.5-1 kg) according to availability on daily basis. Monthly live weight was

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monitored with digital weighing scale (Impressum, Pakistan).

Vaccination (ETV, CCPPV, PPR, Sheep Pox), deworming with oxfendazole, Albendazole, Oxytocanide and injection of Ivermectin for controlling ticks were done every three months according to standard protocols.

Table I.- Fertility percentage of Thalli × Thalli (control) and Thalli × Mundri (experimental) group.

Cross group	Total No of ewes selected	Single birth (%)	Twin birth (%)	Triple birth (%)	Overall fertility (%)
Thalli × Thalli (control)	26	42	58	Nil	100
Thalli × Mundri	26	27	65	8	100

Table II.- Birth and weaning weight of Thalli × Thalli (control) and Thalli × Mundri (experimental) group.

Parameters	Thalli × Thalli (control)		Thalli × Mundri	
	MS	FS	MS	FS
Maximum birth weight	5.5	5.0	6.5	5.5
Maximum weaning weight	All animals sold before weaning	Max. 28 kg	All animals sold before weaning	Max. 32 kg

MS, Male Suckler; FS, Female Suckler.

Table III.- Physical characteristics of Thalli × Thalli (control) and Thalli × Mundri (experimental) group.

Physical characteristics	Thalli × Thalli (control group)	Thalli × Mundri
Colour of mouth	Black (characteristics of Thalli breed)	White mouth and some having black eye circles (black eyes surroundings) just like Kajli breed of sheep
Size of ear	Big in length	Small in length
Colour of ear	Black	White ears and some having black spots
Colour of body	White	White

Results and discussion

Tables I and II show single, twin and triple birth and weaning weights of cross breeds of Thalli × Thalli and Thalli × Mundri. Table III shows physical characteristics. The desirable expected results were attained successfully. The cross breeding is being widely used in the world for attaining different objectives depending upon the

geographical region, preferences, need and economics such as quality of meat (Brzostowski *et al.*, 1997; Leymaster, 2002; Gebreyowhens *et al.*, 2017; Wilkes *et al.*, 2017) for wool traits (Malik and Singh, 2006; Farahvash *et al.*, 2011; Li *et al.*, 2016), the fertility of ewes, survival rates and growth performance of lambs (Ceyhan *et al.*, 2011; Issakowicz *et al.*, 2018).

Gavojdiana *et al.* (2013) reported improved performance of Zackel sheep through cross-breeding with prolific Blue-faced Leicester. Dvalishvili *et al.* (2015) reported that the crossbred Romanov male lambs (7/8 Romanov: 1/8 Argali) had 4.80 kg more body weight and 19 g of average daily gain over the purebred ones. Crossbred Romanov lambs had higher lamb keeping index, growth performance, nutrient digestibility and better metabolic blood profile than purebred ones.

Caro-Petrovic *et al.* (2015) reported that success of crossing depends on the breeds used and the genetic distance among them, as well the combining ability of maternal and individual heterosis to make the proper choice of breeds employed in a crossing system. They further revealed that the genotype and crossing system have significant effect on body weight and average daily gain of lambs.

Sheep cross breeding can increase productivity in terms of live weight and improve adaptation to severe climates measured by reductions in weight loss during winter-spring in Mongolia (Wilkes *et al.*, 2017), Kenya (Konig *et al.*, 2017) and Ethiopia (Ayichew, 2019). These studies have shown that crossbreeds outperformed their local contemporaries with better body weight, mean weaning weight and yearling weight compared to indigenous sheep breeds.

Turkyilmaz and Esenbuga (2019) have shown increased productivity of Morkaraman sheep through crossbreeding with prolific Romanov sheep under semi-intensive production systems and concluded that improving reproductive traits can have a bigger economic impact than merely improving growth rate. Since Romanov is a highly prolific and precocious breed, crossbreeding with the Morkaraman breed will improve reproduction traits in terms of the number of lambs born and weaned.

Conclusion

The objective of this study was to improve the productive and reproductive traits of Thalli and Mundri crosses and to decrease especially the ear length. The desired characteristics such as improvement in birth weights, weaning weights, twinning and tripling percentages, and decreased the ear size of the cross bred has been considerably achieved. Maximum birth weight was achieved as 6.5 kg in male flock and 5.5 kg in female

flock. Ear size was decreased in length and was white in appearance, mouth was white just like Kajli sheep and weaning weight was 32 kg in females.

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Statement of conflict of interest

The authors have declared no conflict of interests.

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