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# Morphological characteristics of Hazaragei sheeps in Bamyan Province/ Afghanistan

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## Abstract

Hazaragei race sheep is one of the most important races of sheep in Afghanistan that is resistant to cold weather. The main race of Hazaragei sheep is widely maintenances by Indigenous people in central regions of Afghanistan such as Bamyan, Daikundi, Ghazni and Ghor. Characteristics of Hazaragei bred sheep are including: growth rate, wool production, milk productionand carcass quality. The survey was conducted in four districts of Bamyan (Punjab, Waras, Yakawlang and Markaz) where most people are engaged in livestock. The information in this study was done using observation method. This study shows that Hazaragei sheep, ewe are mostly hornless and 5% of ram are horned. Horn structure is narrower in young ram, less warping, and in older ram, rams are larger in diameter and more warped. The Hazaragei sheep's ears is narrow, short and drooping, which is 13-15 cm long. The color of Hazaragei sheep is brown, white, black, gray and different color. The length of each wool thread reaches 14-18 cm. The head of the sheep is flat and its length is 16 cm and the diameter of the neck is 30 cm. The tail of Hazaragei sheep is narrow and short, which is 23 cm long, the diameter of the legs is 8-11 and the length of the legs is 30-35 cm, their body length is 50-55 cm and its width is 31 cm.

**Keywords**: Hazaragei Sheeps, Afghanistan, Ewe, Ram, Bamyan.

## Introduction

Sheep are scattered all over the world due to their high adaptability to climatic conditions and low expectations for food and the production of valuable products such as meat, milk and wool

(Philips and Lumis, 2001).The value of animal products is one of the most important branches of livestock (khaldari,2008)In order to have enough milk and wool, the domestication of sheep and goats occurred almost simultaneously with the settlement of humans ( Qahfarokhi., 2010).Afghanistan has abundant natural resources and a favorable climate for animal husbandry (Zafar., 2005).It has an area of 650,000 $Km^2$, including 12% of arable land (approximately 7.9 million hectares), 46% of natural grassland areas, 39% of mountains and 3% of forests (FAO., 2018).Afghanistan is an agricultural country, the economy most of people is based on agriculture (Ferdows., 2015)Afghanistan's livestock sector includes a variety of animals, and the most common are sheep, goats, cows, horses, chickens, cattle and camels. These animals are bred to produce food, fiber, Hide, leather and other by-products (Salimi., 2015).Bamyan is one of the central provinces of Afghanistan (Ministry of Agriculture., 2008). The province has cold winters and Temperate summers (Ferdows.,2015). Have seven districts:Yakawlang, Waras, Sighan, Kahmard, Shibar, Punjab (Najafi.,2014).Bamyan province have 509,289 population(Bamyan Socio- Demographic And Economic Sarvey.,2012), The handicrafts of this province include carpets, Weft, felts, brooms, gloves, socks and jackets, which are made entirely of wool (Musavi etal, 2016). Bamyan province, 80% is covered by mountains and foothills, which is 85-90% of spring, summer and autumn grasslands (Ministry of Agriculture., 2008).We can estimate that these areas have the capacity to bred two million sheep and goats and half a million cows and calves. But in winter, sometimes farmers faces the problem of lack of fodder (Ministry of Agriculture., 2005). The sheep, make up a large part of the livestock, are raised in groups. This animal is kept for various purposes such as preparing meat, milk, wool, although the level of production per sheep is low compared to other countries in Afghanistan, nevertheless, efforts to improve the livestock situation are promising. Sheep are well adapted to the climatic and topographic conditions of Afghanistan and this has made this animal have an important place in the livestock sector (Niaz., 2003).Sheep care is a low-consumption profession because sheep are often grazing animals. On the other hand, sheep do not need advanced equipment and location, they are expensive and do not need much care. In addition to sheep, the animal is calm, so our people, especially in the mountainous and rural areas of the country, are very interested in raising sheep (Rashiq., 2007). Today, sheep breeding in Afghanistan is traditional and no significant work has been done for its growth. Even the local generations have not been properly introduced yet and its characteristics are not known

(Rashiq., 2007).There are different local breeds of sheep in Afghanistan, breeds are bred in specific zones. Hazaragie sheep are common in the mountainous region of Hazarajat and the central plateaus of the country. In general, the yield level of local sheep is low due to various factors, but resistance to diseases and adverse environmental conditions is one of the best characteristics of local generations. So the objectives of this study are to introduce Hazaragi race and knowing the morphological characteristics of Hazaragie sheep in hazarajat.

## Method and Materials

In this study, the morphological characteristics of Hazaragei sheep in Bamyan province were studied. For this purpose, this research was conducted in 2018 in Bamyan province. To conduct this research, four districts of Bamyan (Waras, Punjab, Yakawlang, Markaz) was Done. From each district, 15 sheep's selected, so we randomly selected 60 Hazaragei sheep. Then, the physical properties of Hazaragei sheep such as color, horniness and hornless, physical condition, eyes, face, neck, head, ears, legs, tail, female breast, amount of wool production were evaluated. Appearance is measured by the eyes and their body is measured by a meter. The weight of the young sheep, the weight of the lambs, and the weight of the sheared wool are measured by a digital scale.



## Result

### Physical appearance

1. Horned or un horned

Of the forty sheep's observed in the study, were all hornless, this was equally true in all the areas where the research was conducted, the ewes were 100% hornless and 95% of the ram studied were hornless, the shape and structure of the horn are different from each other, the horn is small and twisted in the rams and varies according to age, Harms with strong horns have the high physical strength. Horn structure in rams varies with age. Young ram have short horns with thin diameter and low Curvature. But older ram have large horns with large diameters and many Curvature.

2. Face shape

Hazaragie sheep has a short body and wool. Heads and ears are smaller in ewes than in rams. The neck of the ewes is narrow and long, the ram necks are short and thick.

3. Color and wool product

The color of Hazaragei wool is not the same in different parts of the body and is in brown,

white, gray, brownish and pictorial colors. The parts of the head and face are white, the legs, around the eyes, the face and the abdomen are black blotch, brown, and Gray, the color of lambs' wool changes from birth to adulthood, Hazaragei sheep wool has many folds, from 6 to 12 folds. The average length of wool fibers is 12-14 cm on average and 14 to 18 cm when the wool is stretched, and annual wool yield is 1.5 kg. The wool of this generation is much thinner than 4-5 years old, as the sheep get older, their wool production increases. The production of wool in the ram is more than its ewe, if we compare the wool of this generation with other sheep, it is relatively soft and thin. The wool of this generation has a good radiance, elegance and quality and its fibers are longer.

4. Head and neck structure

The head of a Hazaragei sheep is 16 cm long and the length of the head varies between 15 and 17 cm at different ages. Also, the average length of the neck and the average diameter of the neck is the same (30 cm).

5. Tail shape

Observations showed that Hazaragei sheep have tail, the tail structure of this generation is narrow and short, which hangs downwards behind the sheep and its average length is 23 - 25 cm.



6. Breast structure

Hazaragei sheep breast structure is 8 cm long and 12 cm wide, the breast has two papilla full of milk, the length of which is 2.8 cm and the thickness is 3 cm

7. Legs structure

The structure of the Hazaragei sheep legs is short, up to the knee, covered with wool. The diameter of the legs is 8-11 cm and the length of the legs is 35-30 cm

8. Head shape

Hazaragei sheep has a small head and a long nose. This generation is a small generation with a head length of 18 to 22 cm.

9. Ears shape

The structure of the ears in Hazaragei sheep is narrow, short, hanging and its length reaches 12 to 14 cm.

10. Body structure and weight

The body structure of Hazaragei sheep varies according to sex, age and nutrition, the body

structure of Hazaragei sheep is small and the weight of the lamb is 8-12 kg at the time of weaning and 12-16 kg at the time of maturity. The male weighs 15 to 18 kg. Hazaragei male sheep are larger and have more than weigh to ewes.

11. Body structure

The back of the Hazaragei sheep is relatively actuate and short, the back of the ram is wide and female generation is narrow, its body length reaches 50 to 55 cm and its width reaches 31 cm.

Table 1: Morphological characteristics (color, presence of horn, length and width, body weight and tail) of Hazaragei race in Bamyan province

| District | Weight body | | Body width | | Body length | | Existence horn | | Color | | | | Tail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ewe | ram | ewe | Ram | Ewe | Ram | ewe | ram | White | Gray | Brown | Black | |
| **Waras** | 12-16 | 16-18 | 28-34 | 30-32 | 50 | 55 | 15 | 0 | 1 | 5 | 2 | 7 | 15 |
| **Panjab** | 10-14 | 18-20 | 29-32 | 26-35 | 52 | 53 | 13 | 2 | 2 | 4 | 1 | 8 | 15 |
| **Yakawlang** | 12-16 | 18-20 | 30-32 | 29-32 | 51 | 54 | 14 | 1 | 3 | 3 | 3 | 9 | 15 |
| **Markaz** | 12-16 | 16-18 | 27-35 | 30-32 | 50 | 55 | 14 | 1 | 4 | 4 | 2 | 5 | 15 |

Biological figure and adaptation

The Hazaragei generation sheep is adopted in cold climates and mountainous areas. This sheep is mostly keeping in Bamyan province (Waras, Punjab and Yakawlangand Markazdistricts).

Symptoms of purity

Appearance of Hazaragei sheep, ram rarely have horns. Lack of horns in ewes, long and slender hair, short, very smart, short legs, narrow and short ears, small head, narrow tail, narrow neck, large udder in ewes and small body.

Fig. 1: an overview of the Hazaragei sheep breed



## Discussion

### Physical appearance

1. Horned or unhorned

In the Hazaragei sheep race, ewes are completely without horns and 5% of the rams are horned. Young rams are short-horned with a thin diameter and low bent, some rams have thick horns that are similar to the writings of Rashiq (2007), the Dutch Committee for Afghanistan (2017) and Bakhtiar (2008).

2. Face shape

The heads of rams are small and larger than ewes. The ears in this generation are narrow, short and drooping, which is 12-14 cm long, the distance between the ears is 15 cm and the length of the head is 17cm.The nose is mostly curved in the ram and the ewes are flat or slightly curved. These findings were consistent with the writings of Rashiq (2006), Musavi et al. (2011) and Zia (2013).

3. Color and wool product

Hazaragei wool have various colors, white, black, brown,Reddish, gray, combination of several colors, while white is more preferred, this research is similar Zia (2011).And Rashiq (2006). The

wool of this generation has good radiance, elegance and quality, and its fibers are long, The length of Hazaragei fibers is between 14-18 cm its findings by Musavi et al (2011)., Rashiq (2006).

4. Head and neck structure

Hazaragei sheep ewes have long, narrow necks, ram have short and thick necks. The length of the head is 15-17 cm and the length of the neck is 30 cm. finding by Sajed (2007).

5. Tail shape

Hazaragei sheep generations have tail, its narrow and short tail, length of 23 cm, which hangs downwards on the back of the sheep, similar the writings of Musavi et al. (2011).The udder structure of the Hazaragei sheep breed is relatively large due to its live weight and has two teat. The results of this study similar the Dutch Committee for (Afghanistan), Musavi et al. (2011) are fully consistent.

6. Legs structure

The legs of the Hazaragei sheep are short and up to the knee is covered with wool.The diameter of the lages is 8 to 11 cm and its length is 30 to 35 cm. This research is in accordance with the writings of the Dutch Committee for Afghanistan (2018), Musavi et al. (2011).

7. Head structure

Hazaragei sheep breed have a long head and a long nose, it's a small generation with a head length of 22-28 cm. The findings of this study are relatively different in relation to the structure of the writings of Musavi et al. (2013).

8. Ears shape

The ears in Hazaragei sheep are narrow and short and reach 13 to 15 cm in length. The findings of this study regarding the structure of the ears with the findings of Musavi et al(2011).

9. Body structure and weight

The live weight of Hazaragei sheep varies according to sex, age and nutrition and its live weight is about 37 kg and these findings are slightly different from the writings of Rashiq (2006), Musavi et al (2011) and Sajid (2013).Musavi et al,explain that the Hazaragei sheep ate the building and weighed 35 kg and the ewes weighed 34.3 kg. But Rashiq (2006), reported the live weight of adult ewes of this generation is 28-35 kg.

10. Body structure

This research shows that the body structure of Hazaragi sheep is small and has a length of 55-50

cm and a body width of 31 cm, its height is 66 cm from the front and 65 cm from the back, and it is similar to Mousavi et al. (2013). He explained that the body structure of the Hazaragi sheep is 23 cm thick and 65 cm tall. In this study, the height of ewes was 50-55 cm and the body width of Hazaragi sheep is 31 cm.

## Symptoms of purity

Appearance characteristics include Ram rarely horned and ewes without horns, slender and long hair, small head with a narrow tail, slender neck, relatively large breasts in ewes and short stature, ingenuity, short legs, slender ears and shorts are some of the physical characteristics of this sheep. The results of this study are similar the reports of Rashiq (2006), Bakhtiar (2008) and the Dutch Committee for Afghanistan (2017), Zia (2011).

## Biological figure and adaptation

Hazaragei sheep are bred in waras, Punjab, Yakawlang and Markaz districts, which are among the cold and highlands of Bamyan province. The characteristics of adaptability to climatic conditions, low expectations for food, high walking power, and good pasture characteristics of this generation its similar to Arefi (2008) and Sajed (2007). The name of this sheep in Bamyan province is due to Hazaragei, which is mostly kept by Hazara people, according to Zia (2011).



## Conclusion

We found that all of Hazaragei sheep ewes in Bamyan province are hornless and 95% of their ewes are hornless. The shape of the horn according to the population and the age of the animal are varies. The Hazaragei sheep breed has a short body and hairy, the head of the ewes is small and the head is large, the ears are narrow, reaching 12-14 cm. And the tail in this generation is narrow, short and has an average length of 23 cm. The back of the animal is relatively arched, the udder of this generation is large due to its low weight, Hazaragei sheep breed has black, gray, brown and white colors or a combination of four colors. Hazaragei sheep are mostly hornless, have a slender neck, short legs, fine wool production, intelligence, short body structure, relatively large breasts (ewe) and adapted to breed in cold environments. Hazaragei race adopted in the cold climate such as (Bamyan province and highlands). Low expectations for food, high walking power make this generation excellently adapted to the climatic and topographic conditions. This sheep is mostly bred in Punjab, Waras, Yakawlang and central districts. This generation is called Hazaragei sheep in Bamyan province.

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