Pashmina wool—a valuable commodity

Abstract
The conversion of goat hair into Pashmina was investigated. Pashmina is obtained from the Changthangi goats found in the Himalayan regions. The nomadic herders and animals that live in these regions have to adapt to harsh environments. The Pashmina goats play an important role in the livelihoods of the nomadic herders.

Keywords: changthangi, pashmina, goat, cashmere, himalayas, ladakh

Introduction
The study investigated the ethnozoological aspects of agriculture in hostile environments and the production of the finest wool in the world. Changthangi or Pashmina goats can tolerate high altitude and the harsh environment of the Himalayan desert by growing an undercoat of fine hair which serves as insulation to keep them warm. This is the origin of pashmina wool.

The research showed that the animals found in these regions such as yak, sheep and goats play a critical role in allowing humans to exist in a harsh environment. The elevation of these regions is upwards of 4,350 m (14,270 ft.) which causes a lack of oxygen, cold temperatures ranging from –20°C (–4°F) to –40°C (–40°F), strong winds, meager rainfall and lack of vegetation. This report will focus on the domestic Changthangi (or Pashmina) breed which produces wool that is known for its firmness, warmth, durability, lightness, softness and ability to absorb dyes and moisture.

Landscapes, harsh climates and nomadic lifestyle
Living in extreme high country, in one of the most remote sections of Tibet’s Changthang plateau, at elevations higher than 14000 feet in the Ladakh Range, the Changpa rely on pashmina goat, sheep and yak herding for subsistence (Figure 1–3).

Figure 1 Landscape of the Changthang Plateau.

Figure 2 Pashmina goat, sheep and yak herding.

Figure 3 Pashmina Goats in harsh conditions.

Husbandry
Nomadic herders sometimes live in tents. In the summer they move the mature goats to locations with vegetation. Often the ground is covered with snow which the goats paw at to obtain access to the sparse vegetation. In the winter, dried surface grass, herbs and shrubs are consumed. The goats are placed in stone lined paddocks at night. The kids remain with the herders all day and are fed on mother’s milk and barley which is planted each year. During the day the kids are...
sometimes placed in holes with some fabric to protect them from
the wind. Adult castrated males are often used as pack animals when
the herders are moving to a new location. Some herders have houses
built with natural occurring materials and it houses both herders and sick
animals. If a kid wanders off, the female herder will cry until the kid is
found and returned to the flock. Goats and sheep are often intermixed.
Mortality rate for the first year is 54% and is caused by respiratory
illnesses, wild animals and due to exposure to the cold climate. The
adult goat color may be white which is most valuable, brownish red,
fawn, gray and black. They have small horns with the male’s being
slightly larger. Adult body weight is 16–17 kg (35.3–37.5 lb.) (Figure
4 & 5).

**Pashmina wool**

The finest fibers have a diameter of 12–15 microns, fine fibers
under 16.5 microns, medium fibers 16.5–17.5 microns and coarse
fibers up to 18 microns. On an equal weight basis pashmina has three
times the insulating value compared to wool. Most goats have two
types of hair called guard hair and pashmina. The pashmina (inner
hair which is the source of the wool) grows on the neck, body, hind
quarter, face and legs. Some goats have it over almost their entire
body. This fine hair protects the animal from cold temperatures. The
hair is removed with an iron comb in late spring when the goat is
shedding. The pashmina hair yield per goat ranges from 310g to 520g.
The higher values are from males and the yield increases with age.
Due to demand for the hair and a limited supply, a reduced quality
material is often produced by mixing goat hair and combining it with
hair from other animals (e.g. silk, camel).

**Economics of raising Pashmina goat**

In the past these goats were slaughtered for food. Since the hair
is a greater source of income than meat usually only animals that are
in bad health are slaughtered. The average carcass characteristics of
the pashmina goat are shown in Table 1. In spite of the fact that the
pashmina wool is very expensive with some garments costing in the
thousands of dollars the herders only receive a modest income. For
example, the profit from a goat is ~15 U.S. dollars/ year and annual
income for a household (average of 3 adults and 2 children) is 220–
425 U.S. dollars. The net return for pashmina goat is 35–40%.

**Table 1** Average carcass characteristics of Pashmina goat

| Sex    | Slaughter weight kg (lb) | Carcass weight kg (lb) | Dressing percentage (%) |
|--------|--------------------------|------------------------|-------------------------|
| Male   | 36 (79)                  | 15 (33)                | 43%                     |
| Female | 28 (62)                  | 12 (26)                | 43%                     |
| Overall| 31 (68)                  | 13 (29)                | 43%                     |

**Conclusion**

Agricultural life at high altitudes is a struggle and requires special
adaptations in people and animals in order to survive. The high
desirability of the wool enables the economic feasibility of pashmina
production. Pashmina goats play an important role in the livelihoods
of nomadic herders or Changpa in the Tibetan plateau and the
surrounding regions.

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**Conflict of interest**

Author declares that there is no conflict of interest.

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**Figure 4** Changpa nomads with Pashmina goats.

**Figure 5** Changpa nomads with Pashmina goats grazing in sparse pasture.