
**Studies on Morphological and Morphometric Variation of Black
Bengal Goat (*Capra hircus bengalensis*) in some villages of
Hooghly and Howrah districts, West Bengal**

Ranu Mukherjee*, Anuradha Koyal*, Pranab Kr. Banerjee*

* *Vector Molecular Genetics Research Unit, Department of Zoology (UG & PG), Serampore College,
Serampore, Hooghly, West Bengal, India.*

ABSTRACT:

Black Bengal (BB) goat is one of the recognized breed among the domestic species in India and serves as integral part of rural India's symbiotic system of crop and livestock production. Variation is a unique feature for every organism which is manifested through morphology and morphometry. BB goats are known to be famous for their adaptability, prolificacy, delicacy of meat and superior skin quality. It is precious germplasm of West Bengal. But enough care has not been taken to study the variation of black Bengal goat in West Bengal. Therefore, a preliminary attempt has been undertaken to know the variation in morphology and morphometry of black Bengal goat in some villages of Hooghly and Howrah districts of West Bengal. Morphological variation in goats, (i.e. main body colour pattern and fur texture pattern) have been obtained. The morphometric study has been conducted on the height, body circumference, limb length and their correlation. Studies has been conducted on 120 goats both adult and kids. The data reveal that full black colouration and black-white patches and rough textures are more prevalent in both the districts. The mean height of adults (47-49cm) and kids (40 cm) in both the districts are more or less same. Kids showed good correlation in different body parts. On the other hand the data indicates a good positive correlation between fore limb and hind limb in the adults of BB goats in Hooghly and Howrah districts.

KEYWORDS: *Morphometry, Morphological parameters, Statistical analysis, Correlation Coefficient, Positive Correlation.*

1. INTRODUCTION

Black Bengal goat is one of the recognized breed among the domestic species in India and commonly known as "Poor man's cow. It is one of the promising animal genetic resources of India and serves as integral part of rural India's symbiotic system of crop and livestock production.^[1] In the present senaries of changing agro climatic conditions , this small ruminant farm animal has tremendous potential to be projected as the 'Future Animal' for rural and urban prosperity.^[2] Goat is a hollow horned mammal belonging to the order Artiodactyla, family Bovidae and the genus *Capra* .Various lines of data ^[3,8] indicated that the black Bengal goat is a dwarf breed, distributed not only in all villages of West Bengal but also in the adjacent part of neighbouring states viz., Bihar, Orissa, Jharkhand and Assam. But the expression of genes related to the valuable traits gradually diluted and considerably lost due to infiltration of genes from other breeds to Bengal breeds.^[3] However, it is expected that some rural areas of West Bengal specially Hooghly and Howrah some pure variety of black Bengal goat are so far available. This breed is known to be famous for their adaptability, prolificacy, delicacy of meat and superior skin quality. They have tremendous demand all over the world not only due to the production of extra ordinary quality meat and skin but also for their milk. Genetic variation of goat breeds can provide reliable information for the selection of parental material. Black Bengal goats are generally black, brown and white in colour but morphological variation is manifested through their body colour viz. black-brown, black-white, brown-white and black-brown-white in both the sexes. Moreover variation in far texture is also present. The Black Bengal goats gain sexual maturity very fast. The average age(194.12 ± 18.73 days) of the first sign of heat of these goats is better than that of any other breeds.^[5,6] The gestation period of Black Bengal goats are 146.72 ± 7.61 days.^[6] The female goat becomes pregnant twice a year and gives birth to 2-3 baby goats every time. They have high disease resilience capacity. It is precious germplasm of West Bengal.^[3] Poverty, hunger and healthcare represent some of the major challenges before rural India as well as West Bengal. The government of India launched "green revolution "for food and security, "white revolution" for more milk production and the "pink revolution" in which meat from black Bengal goat play an important part (Go1-2004-05). Traditionally goat has served as source of livelihood and financial security to large section of society mainly

comprising of resource poor people. In West Bengal small marginal and landless rural farmers traditionally rear goats. Farmers and government are now showing interest to utilize the species *Capra* to increase the supply of meat and to alleviate poverty through creation of employment. Cytogenetical, molecular and microbiological studies ^[4,7,2] have been extended earlier but no efforts have been taken up to study the morphological and morphometric (Measurement of their body parts) variation of black Bengal goat in West Bengal. In view of these reasons a preliminary attempt has been undertaken to study the morphological and morphometric variations of black Bengal goats in some villages of Howrah and Hooghly district of West Bengal and the data have been analysed statistically to measure the degree of relationships between the different variables.

2. MATERIALS AND METHODS

2.1 Selection of animals

The live domesticated animals were selected on the basis of apparent good health and without any physical deformation. A total of 120 Black Bengal goats both adult and kids (60 from the district Howrah and 60 from the district Hooghly) has been used for our study.

2.2 Study area

The black Bengal goats were studied from the rural areas of three villages of Hooghly district viz. Bonderbill, Sheikpara (P.S. Dankuni) and Dehibatpur (P.S. Pursurah) and from three villages of Howrah district viz. Bhandergacha (Block - Amta-I) , Manuchak (Block- Amta-II) and Chittiyasenpur (Block- Udaynarayanpur) .

Study areas have been shown in maps (Fig. 1)

2.3 Collection of other informations of the studied animals

Family history related information was collected from the owner of the domesticated animals. Information related to Fur colour/ colour patch pattern, fur texture, family history and morphometric studies have been obtained during the course of study.

2.4 Study of Morphological Variation

During our investigation both morphological and morphometric studies have been done. Morphological variation based on different body colour, colour patch patterns and fur texture pattern have been incorporated in our study. Morphometric studies have been extended on height, length of fore limb & hind limb, and head to neck, neck to tail and body circumference.

2.5 statistical method

A) Calculation of mean height of adults and kids in the studied area

Measurements have taken using measurement scale (in centimeter). Collected data has been shown in different tables (1 & 2)for Hooghly and Howrah district) respectively. Calculation of mean height of adults and kids was done for the both studied district and has been shown in table 3 and 4 for adults and kids studied in Hooghly district and table 5 and 6 for the same of Howrah district respectively.

B) Method for studying Correlation:

Studies on Karl Pearson's Coefficient (r) of Correlation has been computed for a total of six morphological parameters both male and female, i.e. Correlation between Body circumference & head-to-tail length, Correlation between head-to-neck length & neck-to-tail length and Correlation between for limb length & hind limb length. Those parameters were studied statistically in animals of both sex. Direct method has been applied for computing the correlation coefficient (r) by using deviation from mean.

2.6 Collection of photographs

Photographs has been taken for the site of investigation locality and observed morphological variations.

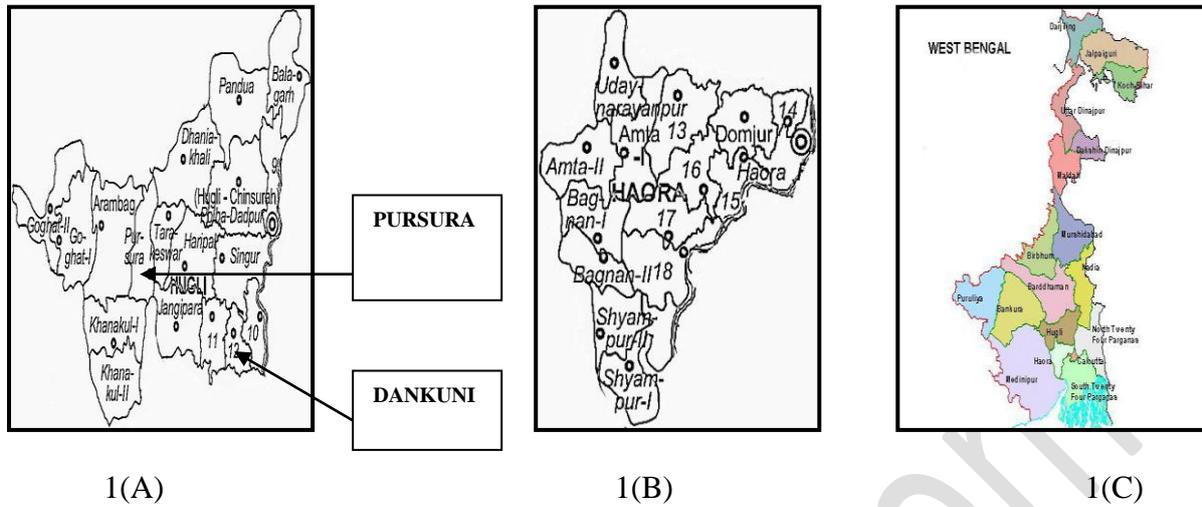


Fig 1 : Study site of Black Bengal Goat 1(A) Map of Hooghly showing Pursura and Dankuni P.S. area 1(B) Map of Howrah showing Amta- I Amta- II and Udaynarayanpur block 1(C) Map of West Bengal showing distribution of the districts under study..

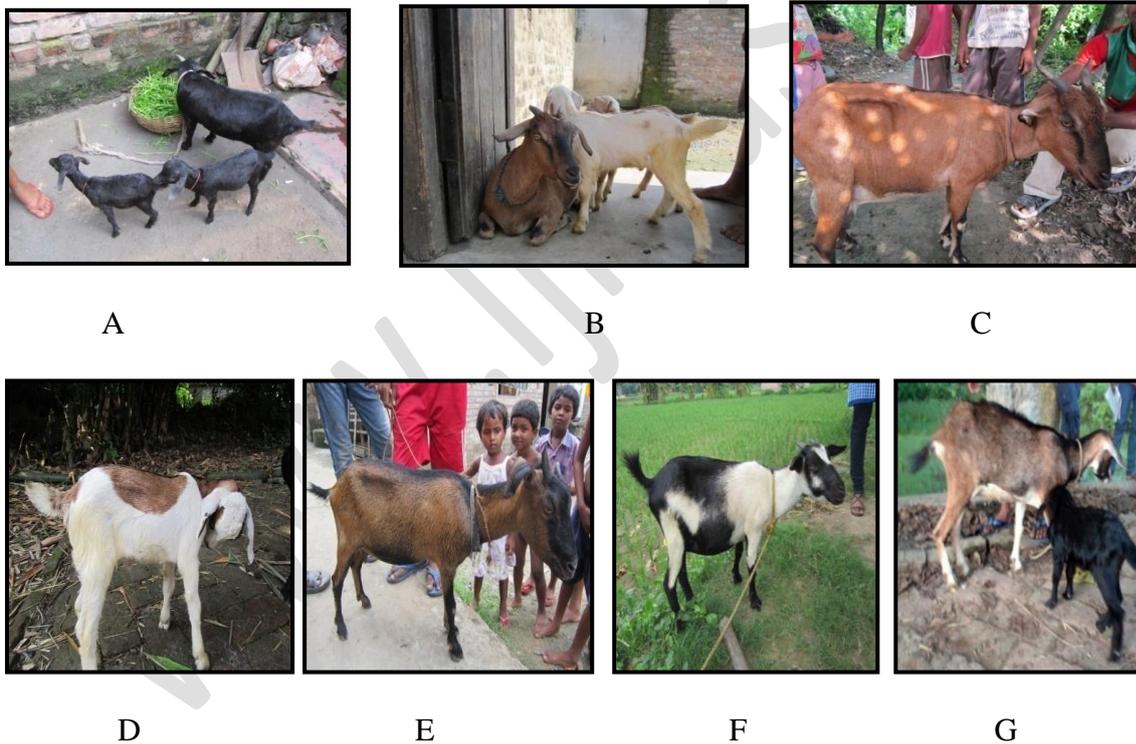


Fig 2 (A, B, C, D, E, F, G) : Black Bengal Goats from different Villages of Hooghly and Howrah district
A – Black , B- White, C- Brown, D- white-Brown, E- Black-Brown, F- Black-White, G- White-Black-Brown

3. OBSERVATION:

To know the morphological variation in black Bengal goat, we have extended our study on different body colours (viz Black, white, brown), and colour patches ((white -brown , brown -black , black white and white - black -brown)of black Bengal goat. Different fur textures viz smooth, slightly smooth and rough has been observed.

For morphometric study we have measured height, fore limb and hind limb length, head to neck length, neck to tail length and body circumference. Correlation between different body parts has also been calculated through statistical method.

Table 1: Collected data regarding measurements of morphometric parameters of Hooghly and Howrah district.

Table 1.1 : Morphometric study of adult goats of Hooghly district

| Observed characters(cm) | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-----------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| Height | 49 | 51 | 47 | 50 | 55 | 50 | 39 | 40 | 39 | 40 | 51 | 51 | 40 | 51 | 54 | 41 | 30 | 49 | 47 | 55 | 30 | 53 | 52 | 55 | 51 | 60 | 53 | 42 | 50 | 56 | 30 | 56 | 51 |
| Fore limb | 27 | 31 | 26 | 30 | 31 | 29 | 24 | 24 | 25 | 27 | 29 | 31 | 25 | 31 | 32 | 29 | 28 | 27 | 29 | 33 | 33 | 34 | 33 | 37 | 38 | 40 | 32 | 28 | 31 | 32 | 35 | 38 | 34 |
| Hind limb | 32 | 36 | 30 | 34 | 34 | 33 | 29 | 27 | 27 | 32 | 37 | 34 | 30 | 35 | 38 | 31 | 32 | 30 | 34 | 37 | 39 | 36 | 38 | 42 | 41 | 44 | 37 | 32 | 37 | 37 | 40 | 43 | 39 |
| Head-neck | 20 | 18 | 15 | 19 | 25 | 19 | 15 | 16 | 15 | 20 | 18 | 20 | 16 | 24 | 21 | 18 | 21 | 20 | 21 | 22 | 17 | 21 | 22 | 21 | 19 | 21 | 22 | 16 | 18 | 21 | 20 | 20 | 22 |
| Neck-tail | 71 | 64 | 53 | 54 | 75 | 63 | 49 | 50 | 50 | 52 | 62 | 62 | 48 | 64 | 64 | 51 | 62 | 60 | 67 | 72 | 66 | 70 | 67 | 68 | 60 | 80 | 75 | 49 | 65 | 70 | 29 | 70 | 66 |
| Circumference | 78 | 70 | 72 | 82 | 97 | 96 | 55 | 54 | 60 | 73 | 76 | 78 | 53 | 92 | 73 | 68 | 77 | 87 | 71 | 85 | 62 | 82 | 80 | 71 | 65 | 82 | 77 | 56 | 71 | 65 | 61 | 67 | 68 |

Table 1.2 : Morphometric study of kids of Hooghly district

| Observed characters (cm) | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|-----------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Height | 35 | 29 | 49 | 44 | 47 | 49 | 43 | 50 | 48 | 46 | 42 | 39 | 39 | 37 | 36 | 42 | 40 | 40 | 44 | 37 | 37 | 36 | 39 | 38 | 38 | 30 | 31 |
| Fore limb | 22 | 18 | 28 | 25 | 27 | 26 | 26 | 28 | 29 | 28 | 29 | 24 | 23 | 18 | 23 | 26 | 23 | 23 | 25 | 27 | 28 | 24 | 27 | 26 | 27 | 21 | 22 |
| Hind limb | 26 | 22 | 32 | 29 | 31 | 29 | 30 | 31 | 35 | 32 | 33 | 28 | 26 | 21 | 27 | 31 | 27 | 27 | 29 | 32 | 32 | 28 | 30 | 30 | 32 | 26 | 25 |
| Head-neck | 14 | 11 | 19 | 15 | 18 | 17 | 17 | 18 | 19 | 17 | 18 | 19 | 15 | 12 | 14 | 16 | 15 | 15 | 16 | 14 | 13 | 13 | 12 | 13 | 14 | 14 | 13 |
| Neck-tail | 36 | 32 | 54 | 50 | 54 | 53 | 50 | 60 | 57 | 52 | 52 | 48 | 49 | 37 | 44 | 47 | 49 | 48 | 53 | 44 | 46 | 42 | 44 | 48 | 46 | 40 | 40 |
| Body circumference | 44 | 41 | 68 | 63 | 69 | 67 | 65 | 73 | 64 | 60 | 58 | 57 | 51 | 48 | 52 | 50 | 53 | 53 | 68 | 39 | 39 | 38 | 39 | 36 | 36 | 32 | 34 |

Table 1.3 : Morphometric study of adult goats of Howrah district

| Observed characters (cm) | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|-----------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Height | 41 | 42 | 41 | 44 | 52 | 53 | 55 | 51 | 57 | 48 | 54 | 45 | 49 | 48 | 45 | 53 | 50 | 45 | 48 | 27 | 45 | 49 | 40 | 48 | 49 |
| Fore limb | 22 | 26 | 23 | 25 | 27 | 28 | 31 | 26 | 34 | 26 | 30 | 26 | 26 | 27 | 26 | 31 | 28 | 26 | 24 | 25 | 25 | 30 | 25 | 26 | 28 |
| Hind limb | 28 | 31 | 30 | 31 | 31 | 32 | 36 | 33 | 38 | 33 | 37 | 31 | 32 | 32 | 31 | 36 | 33 | 30 | 30 | 30 | 31 | 37 | 30 | 32 | 33 |
| Head-neck | 15 | 16 | 16 | 17 | 22 | 23 | 23 | 19 | 20 | 20 | 21 | 21 | 20 | 18 | 24 | 20 | 22 | 17 | 17 | 21 | 18 | 20 | 17 | 25 | 20 |
| Neck-tail | 47 | 54 | 54 | 58 | 65 | 64 | 66 | 71 | 67 | 60 | 60 | 59 | 61 | 62 | 63 | 68 | 67 | 53 | 57 | 59 | 58 | 64 | 51 | 61 | 58 |
| Body circumference | 57 | 54 | 57 | 70 | 79 | 88 | 99 | 99 | 82 | 80 | 82 | 79 | 80 | 79 | 84 | 68 | 78 | 64 | 65 | 70 | 66 | 66 | 58 | 78 | 74 |

Table 1.4 : Morphometric study of kids of Howrah district

| Observed character (cm) | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-----------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| Height | 56 | 56 | 43 | 38 | 46 | 53 | 52 | 40 | 39 | 35 | 39 | 46 | 42 | 42 | 43 | 44 | 44 | 40 | 43 | 47 | 43 | 49 | 42 | 43 | 48 | 24 | 25 | 33 | 32 | 28 | 46 | 36 | 24 | 24 | 34 |
| Fore limb | 32 | 33 | 25 | 23 | 32 | 31 | 27 | 25 | 26 | 26 | 22 | 33 | 26 | 27 | 24 | 25 | 30 | 25 | 28 | 23 | 24 | 25 | 27 | 26 | 30 | 14 | 14 | 22 | 20 | 17 | 28 | 21 | 17 | 17 | 20 |
| Hind limb | 37 | 39 | 29 | 27 | 36 | 36 | 32 | 31 | 28 | 29 | 27 | 34 | 27 | 30 | 30 | 34 | 29 | 32 | 29 | 28 | 33 | 32 | 28 | 34 | 18 | 18 | 24 | 24 | 20 | 32 | 24 | 19 | 19 | 23 | |
| Head-neck | 22 | 22 | 17 | 18 | 19 | 18 | 18 | 17 | 12 | 14 | 17 | 18 | 17 | 17 | 16 | 19 | 21 | 19 | 18 | 17 | 17 | 18 | 18 | 17 | 18 | 11 | 9 | 13 | 16 | 13 | 18 | 17 | 10 | 10 | 13 |
| Neck-tail | 64 | 66 | 49 | 45 | 58 | 61 | 61 | 54 | 40 | 44 | 43 | 55 | 53 | 53 | 50 | 48 | 56 | 51 | 53 | 53 | 48 | 60 | 53 | 46 | 58 | 28 | 27 | 36 | 38 | 30 | 52 | 30 | 28 | 28 | 40 |
| Body circumference | 74 | 77 | 57 | 55 | 72 | 77 | 78 | 67 | 48 | 56 | 53 | 65 | 62 | 69 | 62 | 60 | 64 | 58 | 67 | 76 | 67 | 54 | 53 | 63 | 62 | 30 | 27 | 39 | 45 | 34 | 61 | 55 | 28 | 28 | 40 |

Table 2: Collected data regarding morphological parameters of Hooghly and Howrah district

Table 2.1 : Morphological study of adult goats of Hooghly district

| Observed Characters | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-----------------------|---|---|---|---|---|---|---|---|-----|-----|----|----|----|----|-----|-----|-----|----|----|----|----|-----|----|----|----|----|----|----|----|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | |
| Colour Patch | B | B | B | B | B | B | B | B | B | B/W | B/W | B | B | B | B | B/W | W/W | B/W | B | B | W | Er | B/W | Er | W | Er | B | W | B | B | B/Er | B/Er | B/Er | B/Er |
| Fur texture | S | S | S | S | S | S | S | S | S | S | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | S | R | R | R | S | R | R | R | R |

Table 2.2 : Morphological study of kids of Hooghly district

| Observed characters | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-----------------------|---|-----|------|-----|---|---|---|------|-----|------|-----|-----|----|----|------|-----|-----|----|------|------|----|----|-----|------|-----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Colour patch | B | B | B/W | B/Er | B/W | B | B | B | B/Er | B/W | B/Er | B/W | B/W | B | B | W/Er | B/W | B/W | B | W/Er | W/Er | Er | W | B/W | W/Er | B/W | Er |
| Fur texture | S | S | S | S | S | S | S | S | S | S | R | R | R | R | R | R | R | R | R | R | R | S | S | R | R | R | R |

Table 2.3 : Morphological study of adult goats of Howrah district

| Observed characters | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-----------------------|-----|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|------|------|------|----|------|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Colour patch | B/W | B/W | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | W/Er | W/Er | W/Er | B | B/Er | B/W |
| Fur texture | S | S | S | S | S | S | S | R | S | S | S | R | R | R | R | R | S | R | S | R | R | R | S | R | R |

Table 2.4 : Morphological study of kids of Howrah district

| Observed characters | Serial order of goats | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-----------------------|---|----|----|---|---|---|---|-----|-----|----|----|----|----|----|----|----|-----|-----|------|----|----|----|----|----|----|------|------|-----|-----|----|----|----|----|----|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | | |
| Colour Patch | B | B | B | B | B | B | B | B | B/W | B/W | B | B | B | B | B | B | B | B/W | B/W | B/Br | B | B | B | B | B | B | W/Br | W/Br | B/W | B/W | B | B | B | B | B | B | B |
| Fur Texture | Sl | S | Sl | Sl | R | S | S | R | Sl | Sl | R | R | R | R | R | R | R | R | S | R | S | S | S | S | S | S | S | S | S | R | S | R | R | S | S | S | |

N.b : 1. Colour :b – black, w – white, br – brown, b/w – black and white, w/br – white and brown, b/br – black and brown and w/b/br – white, black and brown.

2. fur texture: s – smooth, sl,r – slightly rough, r – rough

Table 3.1 : Occurrence of Body colour/ colour patch pattern (both adult and kid) in both the districts

| Locality | Pure Black (B) | Pure White (W) | Pure Brown (Br) | White and Brown(W/Br) | Brown and Black (B/Br) | Black and White B/W) | White,Black and Brown (W/B/Br) |
|----------|----------------|----------------|-----------------|-----------------------|------------------------|----------------------|--------------------------------|
| HOOGHLY | 20 (33.33%) | 3 (5.00%) | 5 (8.33%) | 5 (8.33%) | 6 (10.00%) | 20 (33.33%) | 1 (1.66%) |
| HOWRAH | 33 (55.00%) | 0 | 0 | 0 | 6 (10.00%) | 16 (26.66%) | 5 (8.33%) |

Table 3.2 : Occurrence of fur texture pattern (both adult and kid) in both the districts

| Locality | Smooth | Slightly Rough | Rough |
|----------|----------------|----------------|----------------|
| Hooghly | 17 (28.33%) | 8 (13.33%) | 35 (58.33%) |
| Howrah | 24 (40.00%) | 10 (16.66%) | 26 (43.33%) |

Table 4.1 : Calculation of mean height of goats

| Locality | | Total individuals | Total height (cm) | Mean height (cm) |
|----------|-------|-------------------|-------------------|------------------|
| Hooghly | Adult | 33 | 1628 | 49.33 |
| | Kid | 27 | 1085 | 40.18 |
| Howrah | Adult | 25 | 1179 | 47.16 |
| | Kid | 35 | 1419 | 40.54 |

Table 4.2 : Correlation coefficient (r value)

| Locality | | Between Body circumference and head to tail length | Between head to neck and neck to tail length | Between fore limb and hind limb |
|----------|-------|--|--|---------------------------------|
| Hooghly | Adult | 0.60 | 0.75 | 0.96 |
| | Kid | 0.82 | 0.82 | 0.97 |
| Howrah | Adult | 0.81 | 0.65 | 0.93 |
| | Kid | 0.92 | 0.90 | 0.99 |

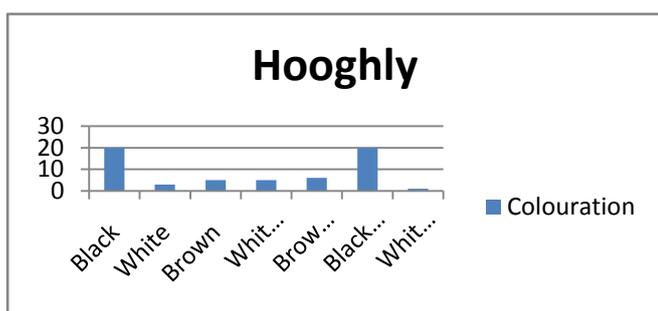


Fig 3 (A)

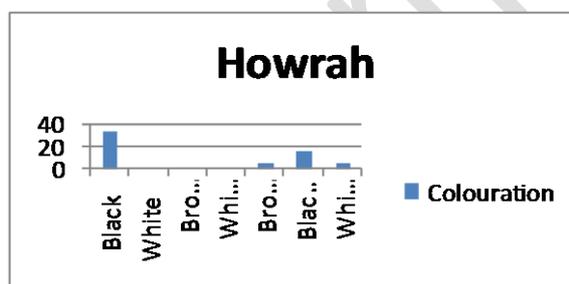


Fig 3 (B)

Fig 3 (A) Body colour variation of BB goats in Hooghly Fig 3(B) Body colour variation of BB goats in Howrah

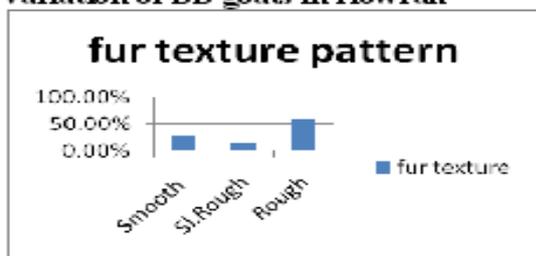


Fig 3 (a)

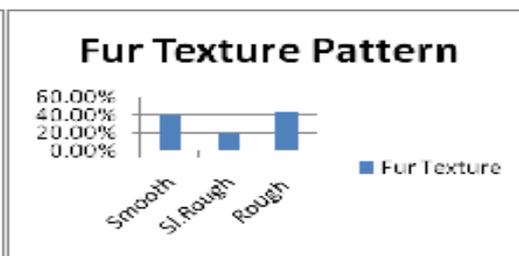


fig 3(b)

Fig 3(a) percentage calculation of fur texture pattern in hooghly fig 3(b) percentage calculation of fur texture pattern in howrah district.

4. DISCUSSION:

In most of the district of West Bengal small marginal and landless rural farmers rear female goats which is helpful for restoration and conservation wild type gene pool. Variation is unique feature in every organism which has been manifested through morphology and morphometry. Genetic variation can be measured within and between the population which makes the breed characteristics.^[7] In nature genetic erosion and degradation is continuous process.^[8] In our investigation, variation in black Bengal goat is manifested not only through body colour and fur texture but also through morphometry of different body parts.

The goats are known to be famous for their adaptability. The male goats are sterilized after certain periods and are used to meet the demand for extraordinary quality food (meat) and skin (fur). Previous studies^[5,7,8] indicated that the persistence of genetic variation is remarkable in black Bengal goat. In our studies white-brown, brown-black, black-white and white-black-brown colour patch are well observed. Our data reveal that black colouration (Table 3.1) is more prevalent than white and brown body colouration. Variation viz Black-white patches and rough fur texture (Table 3.1 & 3.2) are well prevalent in the investigated districts. Our Morphometric studies has also indicated that mean height of black Bengal are same (Table 4.1) in the both districts. Data also reveal that the correlation between different body parts are positive (Table 4.2) in kids in the two investigated areas. But there is no such correlation is observed in adults. However, in adult a perfect positive correlation is present only in between the fore limb and hind limb in the above mentioned areas. Apart from the hereditary cause the variation in morphology and morphometry may depend upon their food habit and geographical location. However, developmental pattern may vary in different kids. Different types of food habit may play a vital role in the growth and development of different body parts of the kids which will be manifested into adults. It has been noted that breeds belonging to different geographical regions show more genetic variation than the breeds belonging to the same area.^[7] It may be suggested that to know the molecular variation of the individual regarding body colour and fur texture studies should be extended through DNA isolation and PCR by using specific primer.

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