

STATUS OF BLACK BENGAL GOAT IN WEST BENGAL

Introduction:

In India, goat by virtue of its adaptability in diverse agro-climatic condition plays a pivotal role in the economy of the weaker section and 4.2% employment generation has been accounted in goat farming in the rural sector. Besides, goat keeping also acts as insurance to the poor farmers during natural hazards likes drought, famine, flood etc.

The breed is locally known as 'Deshi' Goat. It is normally distinguished from other breeds by its certain prominent physical characteristics, viz., small size, deep body, short legs, thin and shiny hair coat. Internationally the breed is famous as 'Bengal Goat'. The breed possesses different pure and mixed colours, amongst which black and black combined with mixed colours are most frequent with certain amount of regional variation. As a consequence the breed is often known as 'Black Bengal'.

Black Bengal is one of the important breed due to its high prolificacy, early maturity, low kidding interval as well as for their delicious meat and high quality black skin. They, in lieu, require almost nothing from their keepers. The breed is a small sized meat type animal and produces excellent chevron and famous morocco leather. They are considered as moving fertilizer plants spreading faeces and urine over wide areas during grazing. They are the fixed deposits for the poorest of the poor, supplying fund as and when necessary by virtue of their ready market demand.

Distribution

The breed is widely distributed throughout West Bengal and adjoining parts of the neighboring states, viz., Bihar, Jharkhand, Orissa, Assam and parts of Tripura. The breed is equally prevalent in Bangladesh. But the main home tract of the breed is throughout West Bengal.

West Bengal has about 11.50 millions of Black Bengal (19th All India Livestock Census, West Bengal) with 621 no. of goats per 1000 households. It meets about 1/3rd of the present meat requirement of West Bengal.

Climate

West Bengal represents considerable variable climate primarily from elevational differences. The majority of the state however, is in the Gangetic Plain Region. The state is covered by planning commission Regions II (East Himalayan Region) and III (Lower Gangetic Plain Region) and by NARP zones (Hill zone, Tarai zone, Old Alluvial zone, New Alluvial zone, Lateritic and Red Soil zone and Coastal Saline zone). The Gangetic plain region is densely populated. West Bengal has only 2.7 percent of the geographical area of India yet has a little more than 8 percent of the Country's population. About 35 percent of the land is irrigated through tank and canal irrigation although tube wells and low-lift river pumping are increasing in popularity. Cropping intensity is around 140 percent.

The Gangetic plain averages 30 m about sea level and consists of flat or gently undulating plains. The western portion of the state consists of an upland plateau of crystalline rocks extending into Bihar state. This is predominantly a rain fed cropping area. Rainfall is generally adequate although the November-March period has inadequate precipitation for rain fed cropping.

Elevation of the hilly zone varies between 100 to 4000 m, which covers hilly area of Darjeeling district. The elevation ranges from 60 to 90 m in Tarai zone. However, the elevation of lower Gangetic plain region between 30 to 50 m.

Livestock feeding systems are quite different by zones with the Himalayan zone relying on alpine and sub-alpine pasture, fodder trees while the Gangetic plain area relies heavily on paddy straw, grazing on crop field periphery, sides of irrigation channels and other fallow areas, sugarcane tops, pulse by products and home produced and commercial concentrates. Some areas of Western plateau are under

forestry where animals graze round the year. Natural grasses, weeds, shrubs and trees are the common vegetation. Green fodder production is meager due to various reasons.

Despite its immense potential in rural economy through low-resource-base production systems, enough has not been done to understand its status, and genetic worth. Systematic steps for characterization of the breed and the conservation of genetic material are the crying need of the time.

Breed Characteristics

Physical characteristics:

It is small-legged goat. Shoulder and hips are of equal height. Chest is wide with deep body. Body looks triangular from side in females, with heavier posterior region. This character is less prominent in males. Face is comparatively short in males with strong and well-built neck and shoulder. Ears are nearly upright. The animal possesses soft but short hair.



Head profile: Three types of head viz., straight, convex and concave are noticed in the breed. Majority of the animals possess straight head, followed by convex and concave type.

Wattles: Presence of wattles in the breed is low. Wattles bearing animals are mostly found in Midnapore and Malda area.

Beard: Bengal goats are also found to have beard in few cases particularly in old ages.

Long body hair: Generally hair coat of the breed is thin, smooth and shiny as required for higher heat tolerance. However few members of the breed are found to possess long hair in some body regions, viz. shoulder, thigh, back, thigh-back, leg and tail.

Variation (%) in head profile, wattles, beard and distribution of long body hair in Bengal Goat

	Zone			
	Malda	Nadia	Midnapore	Overall
Head Profile				
Straight	74.2	80.9	59.9	69.9
Convex	22.7	13.1	34.9	25.2
Presence of Wattles	8.2	8.3	11.3	9.6
Presence of Beard	17.1	5.6	0.3	6.7
Presence of long hair	10.1	13.6	12.7	11.5
Region-wise distribution				
Shoulder	0.7	12.2	16.5	11.4
Thigh	35.9	15.0	13.8	19.5
Back	27.9	20.3	38.0	30.1
Leg	27.9	34.4	6.1	20.1
Thigh-Back	7.6	16.1	15.0	13.5
Tail	0.0	1.9	10.5	5.3

Coat colour: Bengal goat possesses both pure and mixed coat colours. Pure colours are black, white, brown and gray. Mixed colours are formed by the combination of any two of the pure colours. Prevalence of black coat colour is maximum and for this reason the breed is often misnomer as 'Black Bengal'. However White colour is most prevalent in Malda region, black and brown colours are maximum in Nadia and Midnapore regions respectively. Among different mixed colours, prevalence of white-black colour is maximum. The breed possesses a smooth, shiny and thin coat.



Coat colour pattern (%) of Bengal Goat

Coat Colour	Zone			
	Malda	Nadia	Midnapore	Overall
Black	27.4	78.9	53.9	52.9
White	40.7	4.2	5.9	15.7
Brown	8.4	3.9	15.8	10.3
Grey	4.2	0.0	0.1	1.3
White-Black	14.2	8.9	12.7	12.1
Brown-Black	3.1	2.3	9.2	5.5
White-Brown	1.7	1.6	2.2	1.9
White-Grey	0.1	0.0	0.4	0.2
Black-Grey	0.2	0.0	0.0	0.0

Colour variation in Eyes, Muzzles and Hooves:

In addition to coat variation, variation of the colour pattern of eyelid and eyelash, nose and muzzle and hooves is also present.

Eyelid and Eyelash: In conformity with prevalence of coat colour, maximum goats having with white eyelid and eyelash particularly in Malda region, however, black is the commonest colour pattern. Rest of the colour patterns is very less in frequency.

Nose and muzzle: The maximum number of goats has black nose and muzzle. But in Malda region maximum animals are having with white nose and muzzle. Rest of the pure and mixed colours are less prevalent in the population.

Hooves: White, Black, brown and grey are the different hoof colours in the population. Quite naturally, black hoof is the most common. Prevalence of brown and white colour hooves is common in Malda zone.

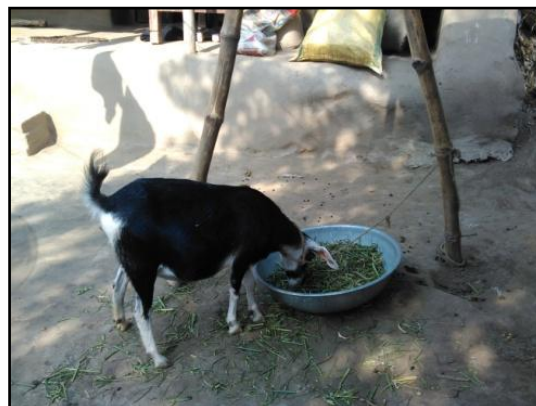
Variation (%) in colour of eyelid and eyelash, nose and muzzle and hooves of Bengal goat

	Zone			
	Malda	Nadia	Midnapore	Overall
Eyelid & Eyelash				
White	39.7	4.1	4.1	14.5
Black	46.5	89.5	77.4	71.7
Brown	3.9	4.9	2.9	3.8
Grey	4.3	0.01	0.6	1.5
Red-Black-White	1.9	0.1	10.2	4.9
White-Black	3.4	0.3	4.3	3.1
White-Brown	0.2	0.1	0.4	3.0
Nose and Muzzle				
White	40.8	7.5	3.4	15.0
Black	49.4	87.5	75.5	74.5
Brown	10.1	3.1	5.4	6.2
Grey	3.4	0.2	1.1	1.5
Red-Black-White	2.2	0.2	9.9	5.3
White-Black	3.9	1.1	4.2	3.3
White-Brown	0.2	0.2	0.4	0.3
Hooves				
White	14.9	2.8	0.6	8.8
Black	36.9	95.7	91.7	85.1
Brown	37.7	1.5	0.2	2.5
Grey	0.7	0.003	7.0	3.5

Ear: Wide variation is observed in the ear phenotype of this breed. Ears are either erect or pendulous. However up to 10 cm in length, ears are mostly erect types. When length is more than 10 cm, relative proportion of pendulous type increases. No sex difference is apparent either in length or type of ear. Though length of ear increases along with age, yet beyond 12 months of age almost 80% of animals have 10-15 cm ears.

Horn: Two types of horn, viz., curved and straight are found in Bengal goat. Females are horned but relatively shorter. Majority of the horns are straight and within 5 cm in length. Though, in animals beyond one year of age, horns of larger length are not uncommon.

Tail: The breed possesses short tail (5-15 cm). Though tail length increases along with age, yet tail beyond 15 cm is very uncommon. Sexual dimorphism in tail character is generally not prevalent.



Body size: In all ages male is marginal bigger than female.

Body Measurement of Black Bengal Goat at different ages

Particulars		Measurement at				
Sex/Traits		Birth (cm)	3 Month (cm)	6 Month (cm)	9 Month (cm)	12 Month (cm)
Male	BL	20.59 ± 0.03	33.53 ± 0.06	37.90 ± 0.19	40.92 ± 0.11	43.69 ± 0.22
	BH	21.89 ± 0.06	34.67 ± 0.03	39.12 ± 0.79	42.58 ± 0.34	45.46 ± 0.26
	HG	23.93 ± 0.09	38.74 ± 0.03	33.53 ± 0.06	48.99 ± 0.12	53.28 ± 0.33
	PG	23.17 ± 0.11	4.25 ± 0.17	48.03 ± 0.23	53.70 ± 0.30	59.73 ± 0.47
	HL	7.45 ± 0.02	10.52 ± 0.05	11.79 ± 0.06	12.55 ± 0.07	13.72 ± 0.12
Female	BL	20.22 ± 0.03	33.45 ± 0.07	37.33 ± 0.20	40.61 ± 0.10	43.71 ± 0.14
	BH	21.48 ± 0.06	34.59 ± 0.03	38.62 ± 0.08	42.55 ± 0.30	45.34 ± 0.17
	HG	23.67 ± 0.09	38.47 ± 0.03	44.79 ± 0.24	48.39 ± 0.11	53.79 ± 0.21
	PG	22.87 ± 0.12	40.69 ± 0.19	46.56 ± 0.21	51.97 ± 0.31	57.86 ± 0.34
	HL	7.33 ± 0.03	10.50 ± 0.05	11.87 ± 0.06	12.88 ± 0.07	14.43 ± 0.08
Overall	BL	20.41 ± 0.02	33.49 ± 0.05	37.62 ± 0.14	40.77 ± 0.08	43.69 ± 0.13
	BH	21.68 ± 0.04	34.63 ± 0.05	38.87 ± 0.56	42.57 ± 0.23	45.40 ± 0.16
	HG	23.80 ± 0.07	38.60 ± 0.01	43.86 ± 0.24	48.69 ± 0.08	53.54 ± 0.19
	PG	23.03 ± 0.08	40.99 ± 0.13	47.29 ± 0.16	52.72 ± 0.22	58.36 ± 0.29
	HL	7.39 ± 0.02	10.51 ± 0.03	11.83 ± 0.04	12.74 ± 0.05	14.24 ± 0.07

BL = Body Length; BH = body Height; HG = Heart Girth; PG = Punch Girth; HL = Head Length.

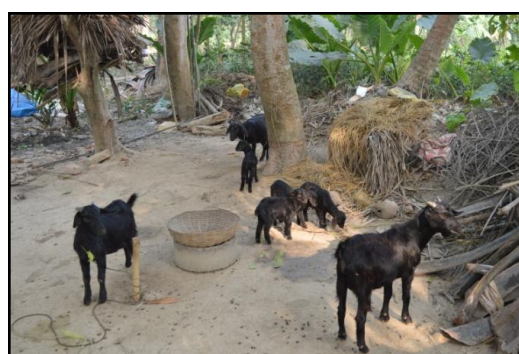
Bengal Goat farmer: Majority of the Bengal goat farmers belongs to the weakest section (either labourer, landless or marginal farmer) of the society. As the prevailing Bengal goat production system requires no classical resource, it is most popular as a supplementary source of family income.

Bengal Goat flock information: Smallest size flocks (up to 4 animals) are most common in all regions and flocks with more than 8 animals are very limited. This is all probably due to growing scarcity of natural pasture or natural feed resource for their flocks and due to gradual intensification of cash crop production. Farmers are to depend on grazing (either free or tethered) only as the breed is not adapted to stall feeding completely. It has also been found that stall-feeding is also not feasible economically for this breed for its low daily gain.

Percentage of animals managed under different flock sizes

Zone	Flock Size		
	Up to 4	5 to 8	More than 8
Malda	65.1	31.2	3.6
Nadia	71.9	23.8	4.3
Midnapore	39.3	40.5	20.1
Overall	55.6	33.3	11.1

Flock Composition: The proportion of males generally reduces sharply beyond 24 months of age. Only few males are retained in the flock are used exclusively for breeding purpose. Castrated (male) animals also constitute a substantial group in the population due to higher market demand over entire (male) animals as chevon producer.



Housing of Bengal goat: Bengal goat is housed mainly for night shelter as well as during inclement weather. Though Bengal goat is typically a grazing animal, yet farmers keep in-house arrangement for feeding and watering for supplementary feeding and feeding during inclement weather. Farmers generally used varieties of materials (like bamboo, paddy straw, earthen tiles, tree leaves etc) for construction of goat house. In few cases brick in earthen or cement mortar is also present. Two major designs is available viz., (i) open with only roof and little side walls, those can be covered completely either with gunny bags or tree leaves and (ii) covered with four walls, doors and windows like opening. Many goat farmers also rear other domestic species under composite farming system. Bengal goats are housed either separately or with other animals or along with human being in their residence. Bengal goats are mostly managed by free or tethered grazing depending upon season and the availability of pasture. Only during raining, farmer try to provide the animals with lopped tree leaves in-house.



In-house feeding management: Arrangement of in-house feeding within goat houses also provided. The farmers used bamboo basket, Metal tub, Bucket and Jute bag as manger

In house feeding arrangement for Bengal goat

Particular	Zone			
	Malda	Nadia	Midnapore	Overall
Proportion of farmers (%)	42.3	74.0	47.4	54.4
Type of arrangement (%)				
Bamboo basket	64.3	78.4	88.7	77.7
Metal tub	28.7	16.5	10.0	17.8
Bucket	6.7	2.4	0.0	3.0
Jute bag	0.0	2.6	0.0	1.5

Drinking water management: Farmers also routinely practice supplying drinking water to goat either once a day during winter or twice a day during summer months. But during grazing drinking of water by the goats has been made from different natural sources, viz., rivers, ponds, ditch, irrigation cannels, paddy fields etc.

Special housing: Bengal goat, particularly young ones are found susceptible to pulmonary infection. Hence, more elite farmers, if not constrained by finance, prefer to provide their animals with special housing during stressful seasons and during parturition. Farmers prefer to confine both mother and neonates in-house or adjoining areas. The duration of confinement varies from zone to zone as well as from season to season. Farmers need to arrange for feeds and fodder, tree leaves during the period of confinement, which is otherwise managed by grazing.

Additional facility in Bengal goat houses: Bengal goat tract being located in hot-humid areas is subjected to high mosquito menace. Farmers being fully aware of harmful effect of mosquito provide their animals with mosquito net and light to give protection to their animals. However, use of these two facilities is limited by shortage of fund with the farmers.

Feeding management:

Bengal goats are managed mainly by grazing and stall feeding in few cases. Animals are stall fed or grazed in phases, viz., morning, noon and afternoon. Animals are stall fed with harvested natural grasses and lopped tree leaves. Bengal goats are not normally habituated with dry fodder. Common tree leaves used are Banyan, Mango, Tamarind, Babool etc. The duration of grazing (5-6 hours) in different shifts, viz., morning, noon and afternoon are different. Duration is minimum during noon. However, the practice was found to be identical in different seasons. Animals usually covered about one sq. km area daily for grazing. Animals are subjected to free grazing, tethered grazing, free grazing in presence of keeper and both free and tethered grazing. Farmers used tethering rope in case of tethered grazing. Harvested crop fields and their boundaries is the major pasture for Bengal goat.

Duration of grazing (hr) of Bengal goat in different phases

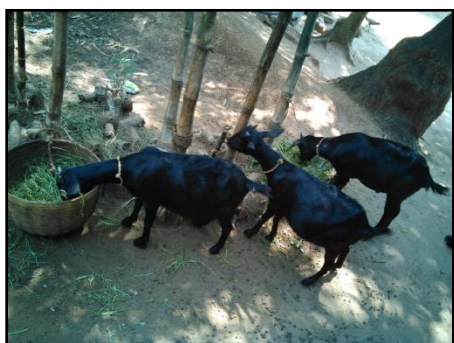
Season	Phase of grazing			
	Morning	Noon	Afternoon	Total
Summer	2.3±0.02	1.2±0.02	2.0±0.01	5.5±0.03
Rainy	2.3±0.02	1.3±0.02	2.1±0.02	5.7±0.04
Winter	2.3±0.02	1.6±0.01	1.9±0.01	5.8±0.03
Overall	2.3±0.02	1.4±0.01	2.0±0.01	5.7±0.01



Farmers also practiced supplementary feeding of their animals in different season depending upon their ability to procure to feed supplements. Common feed supplements used are concentrate, natural grasses, tree leaves and miscellaneous items in different combination. During rainy season, when scope of grazing becomes limited due to raining, maximum number of animals is supplemented with grasses and tree leaves. Grasses and tree leaves are the most commonly used items as feed supplement. Farmers have three sources for grass and tree leaves, viz., cultivated, purchased and natural. But majority of the farmers depended on natural sources only. Supplementary feeding of sucking and weaned kids also common. Kids suckled their mother for about 3 month. In most cases kids are allowed to graze with their mother. Milk, rice gruel, barley and miscellaneous items were the types of feed supplements used in case of suckling kids. Milk used as supplements are from cattle or buffalo as milk production of Bengal doe is very less and often it is found to be critically less in case of triplet or quadruplet born kids.



Rice gruel, a common kitchen by product of West Bengal was also a very common feed supplement for sucking kid/goat. Weaned kids are provided with supplementary feed like grass, concentrate and miscellaneous materials. However, the practice did not vary much from season to season.



Performance:

Bengal goat is a meat type animal, its productive performance has also been assessed in terms of carcass characteristics.

Growth: In all age group male is marginally heavier than female.

Body Weight (Kg) of Black Bengal goat

Factor	Weight at				
	Birth	3 Month	6 Month	9 Month	12 Month
Overall Mean	1.235 ± 0.006	5.300 ± 0.330	7.496 ± 0.028	10.130 ± 0.041	12.877 ± 0.084
Male	1.273 ± 0.008	5.160 ± 0.156	7.626 ± 0.039	10.365 ± 0.061	13.158 ± 0.142
Female	1.205 ± 0.008	4.914 ± 0.163	7.364 ± 0.040	9.899 ± 0.055	12.654 ± 0.100
Single born	1.337 ± 0.013	5.224 ± 0.261	7.817 ± 0.064	10.459 ± 0.092	13.291 ± 0.156
Twin born	1.241 ± .008	4.920 ± 0.145	7.483 ± 0.036	10.110 ± 0.053	12.788 ± 0.124
Triplet born	1.170 ± 0.013	5.318 ± 0.265	7.291 ± 0.066	9.798 ± 0.100	12.617 ± 0.159
Quadruplet born	1.124 ± 0.031	4.748 ± 0.660	7.055 ± 0.156	9.368 ± 0.250	12.571 ± 0.432

Carcass characters:

Slaughtered male animals are of two types, viz., castrated and entire. Optimum age of slaughter is 12 months with a slaughter weight of 12 Kg. True growth ceases beyond 12 months of age. The gain in body weight above 12 months of age is due to fat deposition and therefore not economical. Though females are not popular as meat animals in the breeding tract, yet to obtain better quality chevon, they must not be bred on puberty. Optimum dressing percentage in castrated male is about 57% which is higher than that in female (52%). Skin weight percentage did not vary between sexes.

Carcass traits of Black Bengal goat

Sex	Age groups	Live weight at slaughter (Kg)	Dressing %	Skin weight (%)
Castrated	Up to 1 yr	12.1±0.1	55.8	11.1
	> 1 yr	17.3±0.1	56.3	11.1
	Overall	15.1±0.1	56.6	11.1
Entire	Up to 1 yr	10.6±0.1	54.1	10.3
	> 1 yr	16.1±0.1	54.3	12.0
	Overall	14.6±0.1	54.1	11.6
Doe	Up to 1 yr	10.8±0.2	52.3	11.0
	> 1 yr	16.9±0.8	54.2	12.5
	Overall	12.3±0.3	51.8	11.3

Quality of Black Bengal Chevron

Sex	Moisture (%)	Protein (%)	Ether Extract (%)	Total Ash (%)	pH	Water holding capacity (ml/100gm)	Muscle fibre diameter (μ)
Male	75.7±0.1	19.3±0.1	3.3±0.02	1.1±0.02	6.2±0.02	33.1±0.2	22.0±0.1
Female	76.0±0.1	18.9±0.1	3.5±0.04	1.0±0.03	6.3±0.5	31.3±0.2	21.2±0.2
Total	75.8±0.4	19.2±0.1	3.3±0.04	1.1±0.02	6.2±0.2	32.6±0.3	21.8±0.1

Reproduction:

Male reproduction: Bengal buck attains puberty at around 6 months of age. Farmers use their buck for mating @ 4-7 nos. per week. But satisfactory service is obtained from older bucks than younger up to 6 year of age. Seasonality in male sexual activity is not much evident. Farmers prefer castrating male kids to be raised for chevon purpose within one month of age by castrator method. Open method of castration is also common by local experts moving regularly from farmers' door-to-door for castration.

Male Reproductive parameter of Black Bengal goat

Zone	Age at first mating (Month)	No. of mating/week	Maximum breeding age (Year)
Malda	6.9±0.1	3.9±0.6	9.3±0.3
Nadia	6.9±0.1	4.6±0.3	7.4±0.1
Midnapore	6.4±0.1	3.7±0.3	7.4±0.1
Overall	6.6±0.1	4.1±0.3	8.0±0.1

Female reproduction:

Females also reach puberty at about 6 months of age. Number of service per conception is found to be around 1.5 with natural service in field condition. However, most of the mating takes place under flock systems. Incidences of heat as well as kidding are observed round the year. Prolificacy in Bengal goat is high. Incidences of singleton, twin, triplet and quadruplet or more are found to be around 34%, 54%, 11% and 1% respectively. Average Lifetime number of kidding is around 10.

Female Reproductive traits of Black Bengal Goat

Sl. No.	Traits	2012-13	2013-14	2014-15	2015-16
1	Age at 1st Mating	237.32 ± 2.21	304.47 ± 23.77	237.54 ± 5.07	228.14 ± 12.28
2	Wt at 1st Mating	10.48 ± 0.15	9.67 ± 0.55	9.55 ± 0.21	8.72 ± 0.30
3	Age at 1st Kidding	379.05 ± 2.39	439.17 ± 24.67	383.24 ± 5.31	375.88 ± 11.89
4	Wt at 1st Kidding	14.44 ± 0.14	12.69 ± 0.28	13.18 ± 0.19	11.91 ± 0.19
5	Kidding Interval	204.90 ± 2.09	234.47 ± 4.56	237.79 ± 3.04	223.25 ± 6.61
6	Service Period	61.60 ± 1.55	80.49 ± 3.54	91.94 ± 3.07	74.74 ± 6.82
7	Gestation Period	144.46 ± 1.40	146.14 ± 0.12	147.39 ± 0.26	146.69 ± 0.09

Reproduction performance of Black Bengal Goat

Kidding Type	2012-13	2013-14	2014-15	2015-16
Single (%)	19.86	31.86	31.69	34.03
Twin (%)	55.31	54.51	52.82	54.53
Triplet (%)	20.41	11.90	13.31	10.51
Quadruplet (%)	4.42	1.54	2.17	0.79
Quintuplet (%)	0.00	0.19	0	0.13
Kidding (%)	177.60	203.40	177.49	178.45
Average Litter size	1.80	1.83	1.86	1.78



Unfortunately, due to market conditions, almost the opposite is occurring with the Black Bengal. Because meat production is so important, the ideal situation would have the largest, fastest growing males being used to father the next generation. The animals, however, also tend to fetch the highest prices on the meat market and are thus sold prior to occurrence of proper genetic impact. In fact, often the poorest males are used for breeding, leading to negative selection response.

Abortion, stillbirth, retention of placenta and repeat breeding are the common female reproductive problems but incidences are less.

Physiological parameters:

The physiological parameters viz., rectal temperature, pulse rate and respiration rate is found to be higher in younger animals of both sexes. It could be further observed that in females of both age groups, the values were higher than those of the males.

Physiological parameters of Bengal goat

Sex	Age group	Rectal temperature (°F)	Pulse rate (Per minute)	Respiration rate (Per minute)
Male	Up to 3 month	102.8±0.4	94.0±5.9	49.3±7.1
	Above 3 month	100.7±0.1	82.1±3.0	38.1±1.8
Female	Up to 3 month	103.1±0.4	95.0±6.6	50.3±5.0
	Above 3 month	101.3±0.2	81.5±2.2	43.7±3.8
Overall		101.4±0.1	84.4±1.9	42.4±1.8

Health status of Bengal Goat:

Mortality rate is highest among the kids (up to 3 month) and then reduces along with advancement in age of animal and reaches minimum in animals of more than 12 months of age. Morbidity rate is maximum during rainy season, followed by winter. Bengal goat is most susceptible to damp and cold environment. Maximum recovery rate is observed during summer followed by those during rainy and winter. Mortality rate is maximum in rainy followed by winter and summer. The overall flock mortality is within limit of 10 percent.

Age group wise mortality of Black Bengal

Village Unit	0-3M		3-6M		6-12M		12M- Above		Total
	M	F	M	F	M	F	M	F	
Ayeshpur	16	7	8	10	3	4	0	0	48
Ganguria	16	10	1	2	0	2	0	7	38
Jatirampur	8	8	3	2	2	1	0	1	25
Rangabelia	6	2	0	1	1	0	0	0	10
Bamunia	0	8	1	7	7	22	0	2	47
Beliapukur	6	3	0	3	0	5	0	6	23
Lodhasuli	8	10	0	1	1	3	0	4	27
Total Died	60	48	13	26	14	37	0	20	218
No. of goat available	1116	1057	1055	928	768	882	404	1406	7616
Mortality %	4.97		1.97		3.09		1.10		2.86

Season wise mortality of Black Bengal Goat

Season	0-3M		3-6M		6-12M		12M- Above		Total
	M	F	M	F	M	F	M	F	
Summer	10	9	1	5	2	4	0	6	37
Monsoon	20	15	8	18	10	30	0	4	105
Winter	30	24	4	3	2	3	0	10	76
Total	60	48	13	26	14	37	0	20	218

Mortality in Black Bengal Goat

Year	2012-13	2013-14	2014-15	2015-16
Initial Flock Strength	2517	1479	1869	3217
Kids born	1808	956	1285	1358
Total	4325	2435	3154	4575
Goat Died	301	283	235	218
Mortality (%)	6.95	11.62	7.45	4.77

The preventive measures by vaccination against PPR and Goat Pox, the most killer disease in the breeding tract, is common by the ARD Department. A good number of animals are dewormed mainly during rainy season. Clinical cases are given different types treatment (viz classified as allopathic, homeopathic, *kaviraji* (or traditional) and any other including praying for blessings of Goddess by the farmers. Most of the cases are treated with allopathic medicines. Allopathic medicines are prescribed by veterinarians, quacks and even by the owner of the animal. Compelled by higher cost of allopathic medicine, some cases are also treated with homeopathic and *kaviraji* medicines. However, few cases are not given any treatment or unattained mostly due to over engagement of the farmers in other activities or short duration of sickness.

Incidences of diseases:

Incidences of diseases in the form of different clinical manifestations viz., diarrhoea, fever, pneumonia, tympani/bloat, skin problems, parasitic infestation, dog bite, anaemia etc in Bengal goat are common. Except pyrexia, incidences of other diseases are varying degrees of age specificity. Incidences of diarrhoea and pneumonia are highest among animals of lowest (up to 6 month) age groups, which reduce along with advancement in age. Incidences of some diseases, viz., parasitic infestation and dog bite are highest among animals of middle age group (3 month to 12 months of age). Incidences of diseases also varied according to seasons. Diarrhoea, fever, pneumonia, dermatitis etc have highest incidences during winter. Among different diseases, incidences of pneumonia is maximum followed by diarrhoea, fever, tympani, skin problems, parasitic infestation, poisoning and dog bite.

Morbidity of Black Bengal Goat

Sl.No.	Name of disease	0-3M	3-6M	6-12M	Adult	Total
1	Diarrhoea / Enteritis	165	85	77	50	377
2	Pneumonia /Cold	175	112	55	45	387
3	Tympani/Bloat	0	35	52	46	133
4	Abscess/Wound/Injury	5	15	20	25	65
5	Fracture	0	2	4	2	8
6	Pyrexia	82	95	110	97	384
7	Abortion	0	0	0	22	22
8	Retention of Placenta	0	0	0	4	4
9	Uterine Infection	0	0	0	20	20
10	Dermatitis	2	5	10	12	29
11	Poison	0	0	4	2	6
12	Dog bite	1	4	6	5	16
13	Anaemia	7	5	8	2	22
14	Parasitic Infestation	0	8	18	12	38
Total		437	366	364	344	1511

Income from Bengal goat farming:

Bengal goat farming offers different sources of income. Major among them is the disposal of animals.

Disposal of Bengal goat:

Farmers dispose their goat at different ages and vary from place to place. Sale prices also vary accordingly. Irrespective of sex, disposal rate is minimum up to six months age. Farmers always make effort to retain the younger animals to earn more when grown up. Maximum disposal rate is recorded for animals between 6 and 12 months of age. Castrated males are major sub-group of disposal animals of this particular age group. Bengal goat produces best quality chevon at this age. In more than 12 months age group, female animals form the major sub-group of the disposal animals. Farmers start disposal of females after receiving couple of kiddings. Further delay reduces sale price drastically. Farmers usually dispose animals to middlemen either at home or at market. However, to earn more, farmer sometimes slaughter and sell animal of more than 6 to 12 months age groups in comparison to other age groups. Sale price of Bengal goat also varies according to age and sex of animal, irrespective of sex, sale price (per kg live weight basis) is highest (on an average Rs.150/-) in animals up to 12 months of age and lowest (Rs.100/- to 120/-) in animals of more than 12 months of age particularly of females. This is due to poor quality chevon as available from them. However, sale price of breeding male and doe is higher i.e. Rs. 250/- and Rs.160/- per Kg live weight basis.

Age wise sale of Black Bengal Goat

Age Group	Sex	No. available	No. sale	Sale %	Rate (Rs.)	Value (Rs.)
0-3 M	Male	708	35	4.94	600.00 -700.00	22750.00
	Female	650	18	2.77	400.00 - 500.00	8100.00
3-6 M	Male	511	56	10.96	1000.00 -1500.00	72800.00
	Female	467	54	11.56	600.00 – 900.00	40500.00
6-12 M	Male	368	241	65.49	1500.00 – 2000.00	542250.00
	Female	339	176	51.92	900.00 – 1100.00	211200.00
Above 12 M	Male	292	100	34.25	2500.00 – 3000.00	309160.00
	Female	377	161	42.71	1200.00 – 1800.00	241500.00
Overall		3712	841	22.65		14,48,260.00



Population

In India the goat population has declined by 3.82% over the previous census of 2007 and the total goat in the country is 135.17 million numbers in 2012. Similar trend is also observed in West Bengal. Total goat population in West Bengal was 15.07 million in 2007 which is reduced to 11.50 million in 2012. In this State rate of decline is more (23.64%) than the Indian average, indicating multifaceted problems faced by this sector. Breed wise census has not yet been conducted in this state till date. But most of the goats are belong to Black Bengal and its share to present Indian goat population is 8.51%.

Immigration to the breed and Risk Status

A lot of attempts have been made to improve the body size of Black Bengal Goats by introducing genetic materials of other larger goat breeds. But pure specimen of the breed is still available in several parts of the state. Although the Breed is not at risk but efforts should be required in well ahead for conservation of sufficient live animals in their native tract.

Breed uses and special qualities

Both males and females of this breed are primarily used for meat. This is not a milch breed and average milk yield varies from 150-200g. However, in few cases does are milked after death of her kids. The skin fetches a good price because of its high demand both inside and outside the country. Goat manure is used for crop and vegetable field and flower beds. Black Bengal goats are often used for ceremonial purposes and sacrifices by almost all the communities. Black Bengal goats are highly adapted to the environment in which they live. They are relatively resistant to gastrointestinal parasitic infestations. They have strong flock habit and can stand to moist soil. The breed is good in grazing grass around roadside, cannal and bunds.

Description of Conservation programme in operation

The population and spread of Black Bengal goats is very large, but gradually diluted by irrational breeding practices leading to decrease the pure quality animals. Considering conservation programme is under operation in several parts of the country more emphasis should be given for maintaining enough genetic variability within the breed. Then selection will be very effective to bring about improvement. Inbreeding should be kept to minimum by restricted flock mating.

At present there is no breeding policy for goat in West Bengal. Considering the all important characteristics of Black Bengal goats a breed specific breeding policy should be formulated by the State Animal Husbandry Department for genetic upgradation, conservation as well as to meet up the increased demand of Chevon in the state as well as Country.

Proposed breeding goals and strategies

Because of the previously mentioned shortcomings of the Black Bengal, a logical breeding goal would be to improve rate of weight gain, especially early in life. One possible trait to measure would be weight at a given age, such as at 30 or 60 days. Selection to improve this trait would help to improve birth weight, growth rate, and milk production, because all three would contribute to that phenotype. Unfortunately, no formal national or even large regional breeding programme is currently in place, so wide spread genetic evaluation of commercial animals is not possible. Therefore, a logical approach to start with establishment of an open nucleus herd.

Animals within the nucleus could be monitored particularly closely for phenotypes for accurate selection. In addition, the “best” cooperating farmers using the AI service could be encouraged to record some data on growing animals, with the motivation of perhaps selling the animals or genetic material to the AI centre. The AI service could pay a premium (above the meat price) for superior males, or collect and store semen from males for a short period, then return them to the farmer for sale to the market.

