PROSPECT AND POTENTIALITY FOR GOAT FARMING IN NORTH EASTERN REGION OF INDIA - A REVIEW

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ABSTRACT

Goat being the principal meat producing animal in India and having wide adaptability under unfavourable climatic, feeding and management conditions, pros and cons of goat farming in NE Region of India were reviewed in this article. After considering different factors i.e. population dynamics of goat, feed and fodder resources of this region, topography and climate of different states of this region, availability of goat breeds, availability of other facilities and moreover demand of the local people for chevon, it revealed that goat is potential animal next to pig for economic meat production in most of the states of NE Region.

Prospect of goat farming: Goat farming has several advantages over the husbandry of other livestock species. They are as follows e.g. (a) Initial investment for starting goatery is lesser than dairy, piggery, poultry. (b) Goat consumes less feed which is about one fifth of the consumption in cattle and buffalo. (c) It does not compete with human beings for grains like pig and fowl. So feed cost is lesser. (d) Goat is prolific animal which usually produces twin and some breeds even produce triple and quadruplet. (e) Goat being hardy animal, disease incidence is very less in comparison to cattle, pig, fowl and hence health management cost is lesser. (f) Goat milk is rich in certain amino acids i.e. histidine, aspartic acid, phenylalanine, threonine; certain minerals i.e. sodium, iron, copper; certain vitamins i.e., vitamin A, nicotinic acid and choline. (g) Goat milk is being used to produce different products such as cheese, curd etc. (h) Goat skin is of high values e.g. Skin form Bengal goat is of best quality in the world. (i) Besides meat, milk, skin, hair is another byproduct obtained from goat, e.g. pashmina and mohair is valued high in international market due to its several uses. (j) Faeces and urine of goat being rich in nitrogen, phosphorus and potassium used in field for improving soil fertility and to increase productivity of crop. (k) There is no prejudice about the consumption of goat meat. Above mentioned points indicate that goat is potential animal for economic growth and employment generation.

Disadvantage of goat farming: If goat farming is practised in extensive system, it may cause damage of crop and even soil erosion like all grazing animal e.g. cattle, buffalo, sheep. Secondly milk consumption of goat is less due to bad smell.

Population dynamics of goat in NE Region

As per basic statistics of NE region (1995), goat population in all the seven states of NE region was 3.01 million, which was about 3.02% of total population in India (99.41 m). Statewise population was 2.13 m in Assam which is highest in NE region (70.83%) fol-
Sikkim local goat is native of Sikkim having adult body weight 15 kg at 1 year age in male whereas female weighs 14 kg at 1 year age. They produce two crops in 15 months. Single birth is around 45% and twin birth is around 30%. Average growth rate in male and female are reported to be 36 g/d and 33 g/d respectively.

Climate and Topography
Goat is basically animal of arid and semi-arid region. They prefer hot, dry climate, The climate of N.E. region is subtemperate to temperate and rainfall varies state to state, moderate to heavy. Therefore, humidity ranges from 60% to 98%. The soil is undulating type which is not suitable for rearing large animal. So from climatic point of view it is not very suitable for goat rearing but due to undulating topography rearing of small animals is favourable rather than large animals like cattle, buffalo. From a report of Department of Agriculture Govt. of Tripura, it is found that around 118 thousand hectares of land is barren uncultivable and around 4 thousand hectares land is fallow land in Tripura. So this vast area of Tripura can be utilized for goat rearing.

Performance of goat in N.E. region
In view of the popularity of Black Bengal goats in Tripura a comprehensive study was undertaken at Tripura centre of ICAR Research Complex (Singh, 1987). The study revealed that the growth rate in male and female kid was 37 g/day and 27 g/d. At the age of 6 months male kid attained a body weight of 8.16
Grasses constitute more than 50% bulk of all vegetation utilized as fodder during high rainfall months. This is available from abandoned jhum, scrub, forest, roadside and unutilized agricultural area. Availability of grasses in most of the area of N.E. region is seasonal. Grasses are available after 8 to 10 rain days and ceases within 15 to 30 days after the last rains. C.P. and C.F. content of grasses vary between 2% to 16% and 17% to 40% (Varma et al., 1982) e.g. *Bambusa tuida* (Bijli in Assam, Jawa in West Bengal), *Brachiera rosenesis* (Congosignal in Meghalaya), *Setaria palmifolia*, *Pennisetem polystachoon* (Thin napier).

Yadav and Gupta (1992) reported that
goat gained a body weight of 41.36 g/day after feeding congensial grasses for a period of 1 month. The acceptability and palatability of this was reported to be excellent in case of Black Bengal goat.

It was observed that plants of genus *Artocarpus*, *Bahinia*, *Caneya*, *Ficus*, *Grewia* and *Vites* are most important for providing edible leafy fodder to all the domestic livestock species particularly to goat in this region (Varma et al., 1982). *Exbucklandia* leaves are available during winter in Meghalaya. The DM consumption in goat was reported to be around 3% of body weight in goat. The efficiency of DM digestibility was 64.55% and the gain in body weight was optimum, so goat can utilize this leaves as feed which is very common in this region (Yadav and Gupta, 1992). The majority of these leafy fodders are high in CP and low to medium in CF content. So, evidently there leafy fodders can profitably be utilized to feed to goat throughout the year particularly in lean period.

*Ficus cunia* and *Grewia leevigata*, *Atrocarpus* sp., *Bahinia purpurea* L., are example of fodder trees. *Homalometra arometica*, *Osbeckia crinata* are example of herbs. *Sesbania sesban*, *Millotia auriculata* and *Urena lobata* are two examples of shrub commonly found in N.E. region.

**Availability of by-products for feeding goats**

The tribal people of N.E. region uses different by-products for feeding different classes of livestock, particularly goat. There are forest by-products e.g., banana leaves, banana stem, pine apple leaves, pine needles, wild root and tubers; crop-by products like jackfruit, tapioca leaves, pumpkin, sweet potato, squash etc. Banana leaves are rich source of riboflavin and vitamin A and poor in sodium. So it is advisable to add common salt to banana leaves diet. Squash is a common vegetable of higher altitude. Its feed value is limited due to higher moisture content. Squash leaves may be used for feeding goat. Water hyacinth is a weed commonly available in Assam and Tripura. It contains 13.1% CP and 52.1% NFE. Pineapple leaves and pine apple needles are excellent vitamin feeds which are very suitable alternatives of paddy straw when its supply is short. (Verma et al., 1982).

**Scope of fodder production for goat farming**

Terrace risers constitute substantial amount of area, around 30.4% of total area. These are vulnerable to soil erosion. Terrace risers can be utilized for production of three types of fodder crops - annual legume, perennial legume and cultivated grasses. The yield of thin napier on terrace riser was 90.85 t/ha. The yield of *Stylosanthes hamata* on terrace riser was reported to be 7.35 t/ha and that of *Stylosanthes guyanensis* was 8.81 t/ha (Verma et al., 1982).

Interspaces of horticultural blocks are also important from livestock production point of view. Amount of area under this block which can be utilized for annual legume fodder production. The yield of annual fodder was reported to be 50 to 60 t/ha (Verma et al., 1982).

In N.E. region cowpea (*Vigna unguiculata*) and rice bean (*Phaseolus calcavatus*) are the two most promising legume fodders. The yield of cowpea at low altitude area was recorded to be 12 to 25 t/ha. Its CP content is about 25.75%. The CP content of rice bean is 16.9%. *Lotonis* (*Lotononis bainesii*) is an excellent legume fodder for poor soil condition and at 1400 m to higher altitude zone. It is considered as best frost resistant tropical legume. Its CP content is 19.3%. *Stylo* (*Stylosanthes guyanensis*) is one of the best legume for pasture lands, terrace raisers, acute slopes and all kinds of waste and poor lands. It contains 19.04% CP and its yield is 7.52 t/ha of dry matter at low altitude.

So, from feed, fodder, grass and
browse availability point of view whole N.E. region is very rich and therefore wide scope of goat rearing exists in this region.

Status of other livestock farming
Although cattle population per hundred human population in this region is higher than that of national level. Cattle are mostly zebu type. So, productivity of these animals are low. Due to undulating type of topography and sloppy land, rearing of large animal like cattle, buffalo are not very popular in N.E. region except Assam and Tripura. Moreover, people of this region are less dependent on milk rather than meat for their meal. This is another cause of less popularity of farming cattle and buffalo. Climate, topography and likeness to meat are in favour of farming small animals like pig, goat and sheep. People are being basically meat eater, particularly, they like pork. Moreover, pig population per 100 human population in this region is higher than national level. So, pig farming is most popular. Next preference goes to goat due to less capital investment, disease resistance and requirement of less care and management in comparison to pig, cattle, buffalo and bird. Sheep farming is not popular due to low population density, lack of suitable environment i.e. dry climate etc. Although in recent years rabbit farming is getting popularity in Manipur, Meghalaya, Sikkim of N.E. region due to its prolificacy and shortest generation interval. So considering all livestock farming in this region, position of goatery is said to be next to piggery.

Status and system of agriculture in N.E. region
In N.E. region lands are sloppy except in Assam and Tripura. Land is undulating type. Soil is acidic. Mostly shifting cultivation is practised which leads to soil erosion. Productivity is low to medium. Cereals of this region includes rice and maize. Except this oilseeds like mustard, groundnut, horticultural plants like orange, lemon, guava, pine apple, banana etc. are produced. So, farmers keep livestock as a subsidiary source of income in integrated manner. Moreover, farmers are marginal to landless labourers. So they are unable to invest more capital in dairy because in the cases initial investment is very high. Since farmers landholding is low, so they can not go for mechanisation of agriculture. Therefore productivity per capita is less in comparison to other parts of country. So their source of income is from both agriculture and livestock farming particularly rearing of small animals i.e., goat, pig etc. Hence, integrated farming has been developed. Crop residues are being used for feeding animals. The faeces, urine etc. are being used in field as organic waste for improving fertility of soil. Manural value of goat faeces and urine is very high. Goat can thrive well on the agricultural by-products. So feed cast for maintaining goat is low in integrated system of farming.

People of N.E. region
The people of this region are mostly tribal and Christian. From food habit point of view they are non-vegetarian and therefore prefers meat rather than milk. So for meat they depends on pork, chevon or chicken. Main occupation of people is agriculture followed by livestock farming as a subsidiary source of income. So people prefers to keep meat animal rather than dairy animals. Therefore, there is great demand for goat meat and skin in all the status of N.E. region.

Facilities
Facilities include training facility, credit facility, transport facility and marketing facility. Farmers in this region get financial support from different banks like NABARD, Co-operative banks, national banks. They have scope of insuring their animals by GIC. All the capital towns in this area are well, connected by national highways. There are marketing facility for purchasing seed stock, feed, medicine, vaccine etc. and to sell the outputs. NABARD, ICAR, Department of Animal husbandry of all
the states, Assam Agricultural University, Central Agricultural University impart the training on goat farming to farmers which in turn increases trained manpower on goat production in this region. These organisation are also engaged in research work to develop suitable technologies on goat production which is ultimately being percolated to the farmer’s field.

**CONCLUSION**

Considering the above factors i.e. population dynamics of goat, breeds of goat available in N.E. region, performances of above goat breeds in the agro-climatic condition of N.E. region, feed and fodder resources for goat production, status of other livestock and agriculture, different facilities in N.E. region, it may be inferred that there is high potentiality of goat farming and increasing of goat production in North-Eastern Region particularly in Assam, Tripura, Meghalaya and Sikkim.

**REFERENCES**