



Genetic improvement of ruminants in Andaman and Nicobar Islands

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Introduction

The ruminant species (domesticated) that are available in Andaman and Nicobar Islands are cattle, buffalo and goat.

Climate

The Andaman and Nicobar group of Islands are situated about 1200 km away from mainland India in the Bay of Bengal. They form an arched string of about 572 Islands and Isles stretching from Burma in the north to Sumatra in the south between 6° and 14° N latitudes and 92° and 94° E longitudes. Geographically these Islands are distinguished in two groups, i.e. the Andaman group and the Nicobar group, separated by the deep 10° N channel. The Andaman group covers a gross length of about 464 km and Nicobar group about 293 km. The total land area of all these Islands amounts to only about 8249 sq km, of which about 86% is covered by lush green tropical rain forests. These Islands have a typical maritime climate and are endowed with both southwest and northeast monsoons with an average rainfall of 3100 mm distributed over 8 months (Ahlawat, 2001).

Biodiversity of ruminants in A & N Islands

Agricultural and Animal Husbandry practices are barely 140 years old in these Islands. The people who

have settled in these Islands prior to or post independence period had usually non-agricultural backgrounds and have not undertaken agriculture as a profession. Animal Husbandry is the last priority for the farming community, though are progressing very fast.

In Nicobar group of Islands the scenario is bit different. They are mostly non-vegetarian. Goat farming (among ruminants) is gaining popularity in these Islands. Animal husbandry is mostly practical in the backyard system.

Cattle

Three genetic groups of cattle are available in these Islands, namely local cattle of Andaman, Crossbred population (cross of local with Jersey/Holstein) and Trinket cattle.

The local cattle of Andaman are nondescript and represent an admixture of the different breeds that had been brought to these Islands in different phases of habitation and rehabilitation of migrated people. The inheritance from Red Sindhi, Sahiwal and Haryana could be traced. The cows are moderate in size. The adult body weight is about 200-300 kg. The body colour may be white, black, red or admixture of all these. They are humped cattle (*Bos indicus*). Teats and udder are small in size. The stature is stout.

They are mostly scattered and lonely grazers. The farmers leave their cows early in the morning after milking. The cows go out in the morning hours for grazing and stay in the field or forests till dusk. Some times they take shelter under shade of the tree. The local cattle of Andaman are used for dual purpose. These cows are observed mainly in north, middle, south and little Andaman as well as Campbell bay of Nicobar group of Islands. The local cattle are well adapted to this climate. They are resistant to many bacterial, viral and parasite diseases. They can thrive in poor care and management. These cows produce around 1-3 lit of milk daily with a few exceptions, which can produce upto 6-7 lit of milk daily. They have 6-8 months of lactation period with longer calving interval and higher age at first calving.

There are some crossbreeds in these Islands. They are crosses of local cattle with Jersey or Holstein-Friesian. The milk yield of this genetic group varies from 6-15 lit daily. Holstein crosses are more milk

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produces than Jersey crosses.

Another group of cattle is available in Trinket Island. These are known as trinket cattle. Swedish people, who had settled in a part of Nancowrie group of Islands, had left some cattle of exotic origin in Trinket Island. They used to rear these cows for milk purpose. The cattle had good udder size and milking capacity. The udder size of these cows was subsequently reduced due to nonuse of these cows for milk for generation together. The cows were compelled to survive completely under free-range condition (Ahlawat et al., 2002). These cows are feral in nature and produce 2-5 kg of milk daily without any inputs (Rai et al., 2001).

Buffalo

The buffaloes available in these Islands are mongrel population, which constitutes the inheritance of Jaffrabadi, Murrah and nondescript population. They are water buffaloes and poor milk producer.

Goat

Three different populations of goats are available in these Islands. The local Andaman (Black Bengal type) goats available in Andaman group of Islands, which have been imported from Bengal, Bangladesh and adjacent area in different phases of inhabitation and rehabilitation of migrated people. Second group of goats are feral or semiferal in nature available in barren and Narcondam Island. The third type is Teressa goat available in Teressa and Bambooka Islands (Ahlawat et al., 2002; Rai et al., 2001). Teressa goat can thrive on coconut leaves, unlike other native goats. This is a long legged, slender body, medium to high in height and can achieve upto 70 kg in about 4 years compared to 35 kg of local Andaman goat (Rai et al., 2001).

Genetic Improvement Programme

The genetic improvement programme of ruminants is mainly carried out by the department of Animal Husbandry and Veterinary services in these Islands. Besides this, Central Agricultural research Institute (CARI), Port Blair with its research and extension activities also helps in genetic improvement programme of this Union Territory. Department of Animal Husbandry is carrying out the genetic improvement of ruminants through

Introducing improved breed. Upgrading local stock through artificial insemination or improved breeding

Ensuring better Animal Husbandry practices through extension and Better health care and management.

To extend the facilities for treatment and prevention of diseases, a network of Hospital, Dispensaries, Mobile dispensaries and Veterinary aid centre have been established covering entire area of this territory, in addition, different schemes for control of diseases have also been implemented.

Cattle improvement programme

An intensive artificial insemination and castration programmes are adapted in this territory and is carried out to upgrade the local cattle with exotic germplasm of Jersey and Holstein Friesian. Different level of exotic inheritance in the semen is being used. Mostly it is tried to obtain the crossbred calves with either 50% inheritance of Holstein Friesian and 62.5% inheritance of Jersey. It has been observed that both under farm and field condition higher level of exotic inheritance increases problems of diseases like mastitis, stefanofilariasis, infertility and sterility and adaptability in terms of heat tolerance and survivability.

The artificial insemination programme is implemented using frozen semen technology through AI centres and sub-centres (Anonymous, 1997). Dairy farming with crossbred has gained momentum in last 4-5 years. A liquid nitrogen plant has also been established for FS technology.

The total female crossbred population (all age groups) which was about 11% of total female population in 1997 census has crossed 30% by the end of 2001 as per the latest estimate.

Buffalo improvement programme

Local buffalo population is primarily nondescript with poor milk yield, long generation and calving interval but better adaptability. These nondescript buffalo population is being genetically upgraded by Murrah semen. This programme is implemented using frozen semen technology through different AI centres and sub centres. However, buffalo farming is comparatively less popular among farmers.

Goat improvement programme

The local goats raised in these Islands are reared primarily for meat production. The local goat of Andaman is Black Bengal type. As per the advice of the expert team of Ministry of Agriculture, Govt. of India, Malabari breed of goat were purchased from Kerala and Tamil Nadu during 7th five year plan for upgrading the indigenous breed of goats of Andaman. The department has established two goat rearing farms at R.K.Pur and Dollygunj (Anonymous, 1997). As such there is no genetic improvement programme for Teressa goat. However, conservation and characterization programme of Teressa goat has recently been taken up by CARI and Department of Animal Husbandry jointly.

References

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coding regions of genes. The mutation rate of microsatellites is high resulting in high polymorphism and there are often large numbers of alleles that vary in size at a single locus. Microsatellites can be detected by the PCR using specific primers. It helps in mapping quantitative trait genes.

Single Nucleotide Polymorphisms (SNPs)

SNPs are due to variation in nucleotide sequence because of substitution of one nucleotide for another or the addition or deletion of one or a few nucleotides. There are several methods to detect SNPs such as denaturing gradient gel electrophoresis (DGGE), single-strand conformation polymorphism (CFLP), PCR-based TaqMan assay, etc. the SNPs provide potential markers in or near the gene and are responsible for variations among individuals. Microsatellites have replaced RFLPs. SNPs may replace the microsatellites as the method of choice to detect DNA polymorphism.

Applications of DNA markers

For markers to be applied efficiently individuals with the desired genotype must be identified, there must be an incentive for selecting these individuals, and the genotypic value must be estimated accurately. Molecular markers have several immediate applications like parentage determination, genetic distance estimation, determination of twin zygosity and freemartinism, sexing of pre-implantation embryos and identification of disease carriers.

Long range application of molecular markers are mapping of the quantitative trait loci by linkage, breeding programmes like marker assisted selection (MAS), introgression of a gene, or genes, from one stock into another by selective backcrossing and transgenesis.

Conclusion

Technical improvement is expected to reduce the cost of testing drastically. Improved statistical analysis may reduce the number of typings required. There by utilization of molecular markers seems to be worthwhile. Molecular markers will serve as a potential tool to geneticists and breeders to evaluate the existing germplasm and to create animals with desirable characters.



WORKSHOP ON CAPTIVE ELEPHANT MANAGEMENT - INDIA OCTOBER 2002

The Elephant Welfare Association (EWA) have associated with RSPCA, London to hold a workshop on "Captive Elephant Management" at Trichur, Kerala.

DATES:	VENUE:
October 25, 26, 27 & 28th of 2002	Trichur (Thrissur), Kerala

REGISTRATION FEE:

If paid "Before" September 30, 2002:

1. Participants from India: Rs. 2000/-
2. Other Elephant Range Countries & Students: US\$ 40
3. Other countries US\$ 130

If paid "After" September 30, 2002:

1. Participants from India: Rs: 2250/-
2. Other Elephant Range Countries & Students: US\$ 45
3. Other Countries US\$ 150

Registration Fee includes lunch and two coffee/tea sessions each day.

ASSOCIATES:

Wildlife Trust of India, Kerala Agricultural University,
Kerala Forest Research Institute
FINANCIAL SUPPORT: RSPCA -London

ORGANIZERS:

Elephant Welfare Association - Trichur

TOPICS:

Reproduction & Conservation, Diseases, Musth & Tranquilization,
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ABSTRACT:

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FULL PAPER:

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Meanwhile, If you wish to register, we can mail you "e-registration payment advice" with an active e-payment link.

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For more details please reply with

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