THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
Jan 2024 Vol.4(1), 390-396

Popular Article

Conservation of Goat Population in India

Renuka Mishra[1]*, Saleema Ahmedi Quadri[2], Ekta Yadav[3]
[1-2]Veterinary Gynaecology and Obstetrics Department,
College of Veterinary Science and Animal Husbandry, DSVCKV, Anjora, Durg, Chhattisgarh.
[3]Department of Animal Genetics and Breeding,
Post Graduate Institute of Veterinary Education and Research, Jaipur, RAJUVAS, Rajasthan.
https://doi.org/10.5281/zenodo.10576126

Introduction

India possesses an enormous goat population numbering 148.88 million (20th livestock census), which is highest in the world after China. As per the census report of the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India (2019), India is a rich repository of goat genetic resources having 34 well-recognized goat breeds and these breeds have evolved with respect to different geographical and climatic situation. Attempts have been made to characterize and register the breeds of goats in different regions, but so far only 34 breeds have been recognized (20th livestock census), leaving about 66.29 percent of goat population being called as non-descript although they have certain unique characters.

Among the major states in India, Rajasthan own the highest number of small ruminants. Small ruminants contribute greatly to the agrarian economy and play an important role in the livelihood of a large proportion of small and marginal farmers and landless labourers, especially in dry and arid areas where crop and dairy farming are not so economical. However, this "domestic animal diversity" is now at risk, the reasons being intermixing of nearby breeds, introduction of exotic breeds and change in farming system. All these have resulted in decline of pure line population and dilution of genetic merit. According to the Food and Agricultural Organization, about 30% of the world's recognised 3882 livestock breeds are in danger of extinction, with breeds disappearing at the rate of one per week. This alarming situation poses a grave threat to the long-term sustainability of livestock production and thus global food security. So even if India has a large population of sheep and goat, the small ruminant sector

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

in India is underdeveloped and needs attention of planners and policy makers (Planning Commission 2011).

Our country has 34 registered breeds of goat. Livestock species such as goat gained attention only recently, when it was realised that the production-oriented propagation of goat through crossbreeding and upgrading did not work in the long term, and this approach is eroding the existing genetic architecture of breeds and/or genetic variability in indigenous goat germplasm. Goats are fundamental and having close bondage to most agro-ecosystems in India and it is considered as the important genetic material for each production system. This material is crucial for system resilience and flexibility and enables production and productivity to be increased.

However, this sector appears to have been most neglected in terms of systematic development through advanced scientific practice in terms of their conservation, breeding, feeding, management and health care practices. So, upgrading of this small livestock system is an important pathway for rising the income of marginal, small farmers and landless labourers for better sustenance of rural economy of India.

Small ruminants are the most appropriate to utilise the spare vegetation available in dry land areas through rangeland management and reseeded pastures. They have excellent ability to survive in a prolonged period of draught and starvation and are also less prone to extreme weather condition as well as diseases. Because of their robustness and adaptability to dry conditions, the northwestern and south peninsular region has more population of sheep and goat. During evolutionary course, these indigenous animals have developed characteristics like superior heat tolerance as well as disease resistance over the years and are quiet hardy and are able to cover long distances during migration. Because of their close-grazing nature and ability to utilise very low set vegetation which no other animal can utilise and their capacity to cover long distance in search of forage and water, they have often been associated with creation of deserted conditions. They are relatively better adapted to local agroclimatic conditions and can withstand extremely high temperature during summer.

Causes of declined population of goats

The main reasons for decline in small ruminant population also accounts to:

1. Scarcity of breeding ram
2. High incidence of diseases (and parasites)
3. Scarcity of veterinary services
4. High cost of veterinary services and medicines
5. Imperfect markets

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

6. Inadequate technical knowledge on sheep and goat farming
7. High incidence of infertility problems
8. Scarcity of fodder
9. Lack of credit facilities

Absence of planned strategies for conservation of indigenous breeds and unchecked increase in livestock population are causing continuing deterioration due to inadequate feeding and health care services. Today, in the time of competition, the focus of farmer as well as government is diverted towards the high-producing breeds those can meet the demand, and in turn, the diversity of the sheep and goat breeds faces challenges for existence. This small number of high producing breeds leads to narrowing the genetic base, as native breeds are neglected in response to market forces. The adoption of breeding plans or strategies recommended by various states are neither mandatory nor these are adequately backed by the support service.

Conservation approach

Conservation of small ruminants is a national as well as international issue and needs more consideration to the present status of breed diversity, their role in biodiversity and measures that are necessary if the goals of diversity conservation and self-reliance are to be combined. Conservation policies are quiet complex in developing countries because in majority of cases, information about available genetic resources and their usefulness and need for methods of conservation are clear. Conservation approach of small ruminant genetic resources should integrate and combine necessary associated tools:

1) Supervising and elaboration of existing genetic resources.
2) Breed categorization and diversity analysis at the molecular level to for better assessment of diversity to maximize cost effectiveness of management.
3) Make document accessible and informed use
4) Suitable conservation method, in situ and/or ex situ
5) National watch list

Most of the goat breeds are maintained in small units by individual farmer; hence, unique breeding strategies are required for every breed. These breeds of goats need to be conserved, further multiplied and improved through selection. This could be done through:

i. Proper identification and registration of flocks, the majority of whose animals conform to breed type and have better than average production
ii. Selection of breeding males from these flocks on the basis of the breed
iii. Multiplication and distribution of these superior animals to other flock owners

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

iv. Stakeholder's involvement

v. Cooperative group-breeding schemes with a sufficiently large nucleus breeding flock, created from selected males and females from cooperating flocks, are another means of breeding superior rams and bucks. Such nucleus flocks should preferably be kept open.

vi. Again, the state and central governments could establish large stud-breeding farms for selection and make available selected breeding males to private flock owners or provide natural or artificial service through their proper placement.

In situ conservation

The in-situ conservation of goats has been started by the CIRG, Mathura, Uttar Pradesh, India and has brought the success to CIRG in terms of farmers' participation and breed improvement at the farmers' level. For this purpose, flocks of Jamunapari, Barbari and Jakhrana goats are being maintained at the CIRG under the scientific management system for producing and supplying superior bucks for the breed improvement programme at farmers' flocks. Beside this, breed improvement and conservation programmes of different goat breeds under field condition were launched under the AICRP on Goats by establishing several field units of different goat breeds of India. Under this in situ conservation programme, the most important Indian dairy goat breed, Jamunapari goats, received special attention. The in situ conservation is the most effective method of conservation among the different conservation methods, provided that it is economically feasible for animal keepers.

Ex situ conservation

Some preliminary work on ex situ conservation of goat genetic resources has already been started at CIRG, Makhdoom, Mathura, India. The breeds covered in this programme were mainly Jamunapari and Barbari goats. Cryogenic storage of DNA of different goat breeds is also initiated by CIRG, Makhdoom, Mathura and NBAGR, Karnal, Haryana.

National focal points

To meet all the desired requirement of becoming the national focal point, National Bureau of Animal Genetic Resources (NBAGR) has all necessary basic infrastructure for the conservation programmes on all domesticated livestock and poultry breeds. It has recently developed the guidelines of Intergovernmental Technical Working Group on Animal Genetic Resources. A new centrally sponsored scheme for conservation of such threatened breeds has been started by the Government of India during the 12th Five-Year Plan.

AICRP scheme on goat improvement

The present AICRP scheme on goat improvement was conceived and initiated during 9th Five-year plan with main emphasis on improvement of goats involving farmers' herd in the home tract of different goat breeds and selection within the breed. The programme was based

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

on involving the herds maintained at the Institutional farms (i.e., nucleus herd) and village herds maintained by the farmers. The farm units consisting of Institutional herds maintained under organized farm conditions include Jamunapari, Barbari and Sirohi breeds. Field units are based on the herds owned by the farmers maintained under village management system in the native home tracts and include Jamunapari, Marwari, Sirohi, Sangamneri, Surti, Black Bengal, Malabari and Ganjam breeds. During 11th Plan, five more field units on different goat breeds viz., Black Bengal, Osmanabadi, Gaddi, Assam Hill and Changthangi have been included.

Central Institute for Research on Goats (CIRG)

The Central Institute for Research on Goats is a premier research Institute of Indian Council of Agricultural Research (ICAR), an autonomous organization under Department of Agricultural Research and Education, Ministry of Agriculture, Government of India. This institute was established to enhance and sustain goat productivity in respect of meat, milk and fiber through Research and Extension support. The mandate of the Institute is to undertake basic and applied research in all disciplines of goat production and product utilization, to impart trainings, to transfer technologies and provide consultancy services for improving quantity and quality of meat, milk and fiber production from goat and to develop goat products processing technologies. This institute is involved in improving the production performance of Indian goat breeds, viz., Jamunapari and Barbari through selection. Comparative performance studies on Sirohi, Marwari and Kutchi breeds of goats for meat and milk production under semi-arid climatic conditions of Rajasthan were also undertaken at Western Regional Research Centre (WRCC) of CIRG at Avikanagar, Rajasthan.

Indo-Swiss Goat Development and Fodder Production Project

The Indo-Swiss Goat Development and Fodder Production Project (ISGP) was started in 1981 in Rajasthan, with the objective of improving goat production through genetic improvement and increasing fodder production. This project was formalized through an agreement between the Governments of India and Switzerland and was implemented through the Rajasthan State Department of Animal Husbandry, with technical support from Inter-cooperation, Switzerland. Its main objective was to develop strategies for sustainable improvement of goat production in the semi-arid farming systems of Rajasthan to improve the income-generating capacity and nutrition of families belonging to the weaker sections of the rural community. Under this project, crossbreeding of Sirohi with Alpine and Toggenburg was undertaken to improve the productivity of the breed. It was observed that increase in milk yield was less than expected and hence, the crossbreeding was stopped and the project later on concentrated on selective breeding within the Sirohi breed.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

Department of Animal Husbandry, Dairying and Fisheries

Beside this, the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, GOI, had launched a programme for the conservation of threatened breeds of small ruminants, for which an outlay of Rs. 150 million was provided during the Tenth Plan (2002–2007). Its objective was to preserve the breeds of small ruminants, etc., which are on the verge of extinction by providing proper infrastructure and germplasm in association with State Governments and their undertakings, NGOs, professional bodies and institutes, private limited companies, etc. The Department intended to establish 18 units of small ruminants during the 10th Plan.

However, funds were provided for the conservation of six goat breeds. The goat breeds were Terresa goat in the Andaman and Nicobar Islands, Malabari goat in Kerala, Sangamneri goat in Maharashtra, Black Bengal goat in Tripura and West Bengal, Jamunapari goat in Uttar Pradesh and the Long Haired goat in Nagaland. Of these, the Terresa and the Long Haired goat breeds are not registered. In the 11th Five Year Plan, Rs. 450 million was allotted for this programme. It was intended to support breeds with a declining population and an existing population of about 10,000 animals or less. Nucleus breeding units were to be supported along with strengthening of policy and institutional framework and linkages with research agencies. In the annual report of the Department for 2010–11, funding to the Government of Gujarat for a nucleus breeding unit of the Surti goat is also mentioned. However, no documented result is available on the impact of this project.

Conclusion

Goat is one of the important animals serving the mankind in several ways by producing milk, meat, fibre and valuable byproducts. Economic and social importance of goats for the rural poor demands large research and development investment, hence national governments and international agencies should support in research and development programs for goats to allow exchange of information, germplasm, diagnostics and immunization. In India, conservation of small ruminant helps in maintaining the uniqueness or traditional characteristics and biodiversity of indigenous sheep and goat breeds.

Breeding strategies contribute significantly to improving livestock production efficiency, by enhancing the productive and reproductive performances of livestock. Thus to improve the goat productivity in the country, a need- based location-specific strategy must be developed and implemented keeping in view the availability of resources and utility of breed in different agro-ecological zones of the country. Molecular genetic evaluation of indigenous goats for traits like thermo-tolerance, disease resistance and genetic disorders for improving

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024

the overall adaptability in view of the impending climatic change. In addition, capacity building of goat farmer by providing suitable training and inculcating entrepreneurial characters will help in livelihood security and in turn, it will pave the road of holistic economic prosperity. Strengthening market intelligence, entrepreneurship development, commercialization and transfer of technologies will help the farmers in better income generations.

The future of goat breeds in India lies in the appropriate approaches to conservation, combining a number of integrally related components and effective action programmes approached holistically for successful conservation of goat genetic resources. To address these issues and ensure impact, the way forward will necessitate a wider recognition, better resource use, strong interdisciplinary approaches and institutional support to ensure the future contribution of goats in India as well as other developing countries. In India, the upcoming improvement of the small ruminant lies in the suitable approaches and efficient action programmes for successful conservation of sheep and goat genetic resources maintained with traditional characteristics and biodiversity at the national level.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 26.01.2024