

# **National Workshop on Recognition, Registration and Conservation of Livestock Populations in Pastoral Ecosystems**

6-7 October, 2017

Hosted by

**Centre for Pastoralism, Sahjeevan and National Bureau of Animal Genetic  
Resources (NBAGR)**

**In collaboration with Department of Animal Husbandry, Government of Gujarat  
and Ministry of Agriculture and Farmers Welfare, Government of India**



*Union Minister for Agriculture and Farmer Welfare Smt. Krishna Raj presenting letter of Registration of Kachchhi-Sindhi horse breed, to representative of Ram-Rahim Kachchhi-Sindhi Aswa Palak Cooperative.*



*A view of the audience at the workshop.*

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# List of Acronyms

AAU	Anand Agricultural University
AHD	Animal Husbandry Department
AI	Artificial Insemination
APMC	Agricultural Produce Market Committee
BAIF	Bharatiya Agro Industries Foundation
BPUMS	Banni Pashu Uchharak Maldhari Sangathan
BRLF	Bharat Rural Livelihoods Foundation
CfP	Centre for Pastoralism
CONARE	Conservation of Nature through Rural Awakening
DAH	Department of Animal Husbandry
GLDB	Gujarat Livestock Development Board
GoG	Government of Gujarat
GoI	Government of India
GoR	Government of Rajasthan
HIC Project	Homes in City Project
HVAM	Himachal Van Adhikar Manch
ICAR	Indian Council of Agricultural Research
KKKS	Kalimpong Krishak Kalyan Sangathan
KSWDCL	Karnataka Sheep and Wool Development Corporation Limited
KUUMS	Kachchh Unt Uchharak Maldhari Sangathan
LPPS	Lokhit Pashu Palan Sansthan
MARAG	Maldhari Rural Action Group
NBAGR	National Bureau of Animal Genetic Resources
NGO	Non-Governmental Organization
NISTADS	National Institute of Science, Technology and Development Studies
PTP	Progeny Testing Programme
RLDB	Rajasthan Livestock Development Board
RLEK	Rural Litigation and Entitlement Kendra

RRAN	Revitalizing Rainfed Agriculture Network
RRC	Recognition, Registration and Conservation
SC	Scheduled Caste
ST	Scheduled Tribe
SURE	Sustainable Upliftment of Rural Economy
SDAU	Sardarkrushinagar Dantiwada Agricultural University
ULDB	Uttar Pradesh Livestock Development Board
VO	Veterinary Officer
VRTI	Shri Vivekanand Research and Training Institute
WASSAN	Watershed Support Services and Activity Network



# Acknowledgments

This workshop, was made possible by the support, assistance and encouragement of a several people in government and civil society organisations. We take pleasure in acknowledging these important contributions.

**Shri Purushottam Rupala**, Union Minister of State for Agriculture and Animal Husbandry and Panchayati Raj came and engaged enthusiastically with the pastoralists in the Living Lightly exhibition launched in Delhi in November 2016. In subsequent discussions he saw value in the breed recognition works undertaken in Gujarat, and asked that this be extended nationally. The workshop would not have been possible had it not been for his guidance and support. We are also grateful for the wonderful support extended to us by his PS **Shri Bhuvnesh Kulsreshta** and the MOS staff, Additional PS **Shri Vivek Bhatt**, Assistant PS **Shri Kunal Pandey** and PA **Shri B. Ravichandran**.

Our thanks also to **Smt. Krishna Raj**, Minister of State for Agriculture and Farmers Welfare. The Honourable minister agreed to give the keynote speech for the workshop expressing the Ministry's commitment to providing recognition to pastoral breeds in the country.

At the ministry in Delhi, we owe special thanks to **Shri Devendra Chaudhry**, Secretary Animal Husbandry, Dairying and Fisheries, for providing guidance, challenging some of our assumptions and ensuring state participation. We look forward to taking this agenda forward with his expertise and understanding of the sector. **Dr. Bhusan Tyagi**, Assistant Commissioner, Department of Animal Husbandry, Dairying and Fisheries, Government of India, was the officer responsible for co-organising this workshop with CfP. He ensured a small financial contribution as well as linking us to various state animal husbandry departments.

In Gujarat, **Shri Sanjay Prasad** (Principal Secretary, Agricultural and Cooperation, GoG), helped put the program together. His evocative speech during the inaugural function was instrumental in setting the tone for deliberations that followed.

The Gujarat Livestock Development Board (GLDB) was the official collaborating partner in hosting this workshop and our thanks to **Dr. Hita Patel**, CEO, GLDB, for all the assistance she provided, including critical financial support.

**Dr. A. J. Kachhiapatel**, Director Animal Husbandry, GoG, has initiated the work in the country by developing a project for recognition of lesser-known breeds in Gujarat and implementing it with Sahjeevan. He took special interest in working through the workshop plan with CfP. We thank **Dr. Nisha Shah** for comparing the inaugural session of the workshop.

We are indebted to the **National Bureau of Animal Genetic Resources**, (NBAGR) Karnal, for their technical support and encouragement for the work Sahjeevan has undertaken in Gujarat. In particu-

lar thanks are due to **Dr. Arjava Sharma** for the many ways in which he has facilitated our relationship with NBAGR and for the clarity of thought that he has brought to the whole question of indigenous breed recognition and conservation. Over the course of our workshop, Dr. Sharma provided leadership and articulated the path the states need to take to bring the pastoral breeds into the mainstream of support and conservation. We look forward to his continued leadership and guidance.

The **Ahmedabad Mill Owners Association** was generous in providing their auditorium where we were able to hold our workshop. **Debanjana Dey** served as the meeting Rapporteur and we are grateful to her as well.

We received generous support from a number of organizations, including **Gujarat Livestock Development Board**, **Central University Gujarat**, **Bharat Rural Livelihood Foundation (BRLF)**, **Revitalization Rain-fed Agriculture Network (RRAN)** and the **Ford Foundation**. Some of this support was agreed to at very short notice for which we are particularly grateful. Our donors were also part of our meetings and contributed richly to the discussions. Particular thanks to **Dr. Sabyasaachi Das** of the RRAN for being with us over two days, and for anchoring more than one discussion.

# Executive Summary

This workshop was organized with the broad objective of launching a nationwide programme using a commonly accepted methodology for the identification, registration and conservation of indigenous livestock breeds developed by pastoralists in different parts of the country. These include cattle breeds, goats and sheep, ponies, horses, donkeys, camels and so on – livestock upon which the livelihoods of pastoralist communities are founded. The workshop was a collaborative initiative of the Government of Gujarat, National Bureau of Animal Genetic Resources (NBAGR), Ministry of Agriculture and Farmers Welfare, Government of India and the Centre for Pastoralism (CfP), a unit of Sahjeevan.

The workshop was inaugurated by Smt. Krishna Raj, Honorable Minister of State for Agriculture and Farmer Welfare, Government of India, and was attended by senior officials from the Government of Gujarat, the National Bureau of Animal Genetic Resources, and by animal husbandry departments from nine states. Large numbers of representatives of pastoralist communities from across the country were present alongside members of civil society organizations and academics.

Following an inaugural session, the 2-dayworkshop was divided into three technical sessions, on (i) the Importance of indigenous breeds: An economic and climate change perspective; (ii) the registration of pastoral breeds: Policies, participatory documentation and registration process; and (iii) State experiences: Policies and program on identification and importance of pastoral livestock breeds. A concluding section generated a series of recommendations.

Key highlights of the technical and concluding sessions included:

- Participants in various sessions highlighted the value of indigenous breeds from a variety of perspectives, including — climate change, waste material produced by indigenous breeds; the contribution of pastoral breeding to animal populations maintained by agricultural communities, dairies in various parts of the country and the meat economy.
- There was broad-based agreement on the dramatically superior adaptation of indigenous breeds to local extremes of climate, topography and vegetation. Sophisticated genetic analysis supporting this notion was shared in the meeting, representing a significant advance in our understanding of the mechanisms by which such adaptive capacities have developed.
- The Director of NBAGR shared a comprehensive plan with regard to advancing the workshop's agenda of recognizing, registering and conserving indigenous breeds. He stressed the importance for communities to take the lead in this process.
- A number of speakers made reference to the idea that it is insufficient to simply focus on the breeds as part of a registration exercise. Breed recognition needs to take place alongside an



understanding of the ecosystem and cultural practices within which such breeding is embedded. No indigenous breeding will survive in the absence of its physical and cultural context.

- Participants also described the various breeds that had been recognized and registered as distinct breeds, along with the programmes that state governments have put in place to incentivize the conservation of indigenous breeds.
- A number of speakers made reference to dramatic increases in dairy and animal prices following formal registration of a variety of breeds across the country.
- A comprehensive listing of yet to be recognized indigenous populations across the country took place, in the expectation that these need to be studied and documented to understand whether these are unique populations.
- A broad methodology for undertaking breed recognition studies was shared and discussed and will probably form the basis for such work going forward.
- All participants unanimously recognized the need to initiate a program aimed at Recognizing, Registering and Conserving indigenous breeds.
- Representatives from a number of states expressed interest in working with NBAGR and CfP to initiate work on the Recognition, Registration and Conservation of indigenous breeds in each of their states.
- A decision was taken to have state level consultations in 3-4 states to start with, as a means of identifying populations that should be prioritized for further study, and for developing a methodology that might be followed in that state.
- NBAGR expressed interest in being a part of this process.
- NBAGR and CfP expressed interest in establishing an MoU to demarcate the roles and responsibilities each might take on in moving this process forward.

# Introduction

This workshop was organized with the broad objective of launching of a nationwide programme using a commonly accepted methodology for the identification, registration and conservation of indigenous livestock breeds that are developed by pastoralists in different parts of the country. These include cattle, buffalo, camels, goats and sheep, ponies, donkeys and horses, and so on – livestock upon which the livelihoods of pastoralist communities are founded.

The workshop was a collaborative initiative of Government of Gujarat, and National Bureau of Animal Genetic Resources (NBAGR), Ministry of Agriculture and Farmers Welfare, Government of India and Centre for Pastoralism (CfP), a unit of Sahjeevan. The Honourable Minister of State, Smt. Krishna Raj, inaugurated the workshop with participation by senior officials of Animal Husbandry Departments from nine states in the country. The aim was to generate momentum for undertaking collaborative measures (by state governments, civil society and CfP) towards the recognition, registration and conservation of ‘unregistered’ pastoral livestock breeds.

The over-arching rationale for this agenda stems from the following: although we have lost precious genetic stock through large-scale cross-breeding programmes, our pastoral communities have continued to scientifically breed and conserve several livestock breeds. Even today, a large informal market exists for these animals, and provides bulls and cows to farmers and other breeders. Identifying new breeds maintained by pastoralist communities has many benefits beyond simply bringing unknown populations to the register: it enables concerned stakeholders to appreciate locally relevant and robust production systems; enhances returns to pastoralists as a result of higher market valuation; and reinforces pastoralists’ commitment to the development and conservation of breeds and their ecosystems. Unfortunately, large numbers of indigenous breeds remain un-recognized (referred to as non-descript), and the “keepers of these genes”, the pastoralists, are routinely denied state support in maintaining these valuable genetic resources.

This workshop aimed to bring together government, non-government and civil society actors on a common platform with the following **Objectives**:

1. To share with participants the processes and outcomes of the breed recognition work undertaken in Gujarat and elsewhere over the past ten years;
2. To understand current breeding policies and practices within each of the states participating in the workshop;
3. To understand the current status of breed registration/recognition in participating states;
4. To develop a mutually acceptable working methodology by which this work might be taken up across the country; and

5. To obtain broad-based acceptance within participating state governments for supporting the proposed state-level work on breed recognition.

The workshop hoped to generate the following Outcomes:

1. Agreement amongst participating states on the need for undertaking such breed recognition and registration work;
2. Consensus on a broad methodology to be followed in such work; and
3. A roadmap for how such an agenda might unfold in a variety of states in the country.

This report provides a summary of the rich and varied discussions that took place over the course of this two-day workshop, and concludes with a set of recommendations that emerged over this period.

# Inaugural Session

The workshop started with a hearty welcome by **Dr. A. J. Kachhiapatel** to all the distinguished guests including **Smt. Krishna Raj** (Honourable Minister of State for Agriculture, Farmer welfare, Government of India), **Shri. Sanjay Prasad** (Principal Secretary, Agricultural and Co-operation, Government of Gujarat), **Dr. Arjava Sharma** (Director, NBAGR), **Dr. D. K. Sadana** (Ex Scientist, NBAGR), **Dr. Uma Shankar Singh** (Joint Director, Animal Husbandry Department, Government of India), **Shri. Sandeep Virmani** (Centre for Pastoralism), and to the audience that included representatives from pastoralist communities from across the country, NGO representatives, and a wide range of academics. The traditional lighting of the lamp and a pastoral song (Jodiapawa) followed this welcome address.



In his welcome speech, **Dr. A. J. Kachhiapatel** expressed the hope that the workshop would provide a platform to representatives from State Animal Husbandry Departments, National Bureau of Animal Genetic Resources, NGOs and pastoral communities from different part of the countries to collaborate and advance the process of characterization, documentation and registration of pastoral livestock breeds and also appreciate and recognize the pastoral methods of breed development and management which have been practiced for centuries as a sustainable and resilient livelihood.

Dr. Kacchhiapatel emphasized the tremendous livestock diversity that Gujarat exhibits and the efforts of pastoral communities in developing these breeds or improving them from a scientific standpoint. He also spoke of the tremendous strides that had been made in the state of Gujarat in having such breeds recognized, and was appreciative of the collaborative efforts between agricultural universities, the state government, NBAGR, local NGOs and the pastoral communities in enabling such recognition to take place. He was hopeful that similar progress would be made in other states as well.

**Sh. Sandeep Virmani** of the Centre for Pastoralism, stated the objectives of the workshop as the necessity to recognize, register and conserve indigenous breeds in today's context of climate change and increasing uncertainties, owing to their resilience, their capacity to survive in harsh conditions and their ability to secure the livelihoods of communities that have developed and maintained these breeds for centuries. Efforts are being made by the Animal Husbandry department and NBAGR to recognize and register new livestock breeds for conservation and also to secure the livelihoods of animal breeders. However about 60% of the livestock remain to be documented. He spoke of this workshop as a platform to advance this process with collaborative efforts from NBAGR, State Ani-

mal Husbandry Departments, Universities, pastoral communities and Civil Society Organizations.



**Shri. Sanjay Prasad** provided opening remarks on the role of the central government and state governments in conservation of indigenous breeds. Amongst other things he spoke of the fact that new opportunities were arising related to the marketing of produce from such breeds, and made reference to growing consumer demand for organic milk from indigenous cows. He also made the point that there is growing evidence of the value of indigenous cow urine, with some evidence suggesting higher mineral content than in exotically bred animals. And finally, he spoke of the international market, with growing demand in Germany for produce such as freeze-dried dung of India's indigenous cow population.



**Dr. Arjava Sharma** delivered the theme address, and described recent developments on the registration of indigenous breeds. Of India's diverse livestock population, 169 livestock breeds have thus far been registered, with Gujarat alone contributing 20 of these. A further 65% of livestock breeds are not registered in the country. He spoke of how pastoralists have played a key role in preventing excessive dilution of these breeds. Dr. Sharma elaborated on the need to recognize these communities and the deep knowledge that underlies their management and breeding practices. He suggested that the formation of Breeders Association amongst various pastoralist groups might serve the key purpose of representing these communities

and securing their and their breeds' interests.

**Smt. Krishna Raj** delivered the inaugural address. She began her lecture by quoting the Prime Minister – The growth of a nation depends on the growth of its farmers. To realize this vision she stressed that a synergy between crop-livestock systems need to be promoted in support of organic agriculture and indigenous livestock. Importance needs to be diverted towards cow dung and cow

urine apart from milk production to promote organic agriculture. The pastoral communities distributed in different states of the country have their methods of breeding and breed conservation and this needs to be recognized to enable the conservation of these breeds in their local breeding tracts. Policies should also focus on the formation of goat breeder associations to market goat milk widely given the nutritional value of the milk and the high price it fetches from the market.

The final part of the inaugural session involved Smt. Krishna Raj handing over NBAGR's letter recognizing the Kachchhi-Sindhi Horse to Ram Rahim Kachchhi-Sindhi Ashvapalak Sahkari Mandali. The horse is a native of Kachchh district and is bred by Sama, Ahir, Jadeja and Sindhi Muslim communities. The horse is mainly known for its special type of gait (rewalchal) that enables them to cover longer distances than Kathiawari or Marwari horses.

The inaugural session ended with the vote of thanks.



# Technical Session 1:

## Importance of indigenous breeds: An economic and climate change perspective

The chair **Dr. Vasant Saberwal** introduced the session by highlighting the importance of indigenous breeds and the sustained economic benefits that are derived from them even in time of stress. **Dr. Arjava Sharma** (Director, NBAGR), **Dr. D. K. Sadana** (ex. Scientist, NBAGR), **Dr. Manish Mukesh** (Principal Scientist, NBAGR), **Dr. Hitesh Jani** (Gujarat Ayurvedik College, Jamnagar) and **Dr. Nitya Ghotge** (Anthra) were panelists on this session.

**Dr. Sharma** presented the keynote talk that was structured around a plan for the management of Indigenous animal genetic resources. He shared statistics demonstrating that India has the largest livestock population in the world, including the largest buffalo population, the second largest cattle and goat population and the third largest sheep population. Dr. Sharma then outlined his thoughts on the agenda for managing indigenous breeds:

1. Characterization and Inventory: there is a need to characterize the remaining populations by the protocol developed by NBAGR. This will require training manpower to improve accuracy of information recorded as part of the registration process; undertaking wide-ranging surveys along with rigorous documentation and tracking of parameters identified by NBAGR; preparing a breed watch list to identify the breeds under threat; and constructing a comprehensive information system on indigenous Animal Genetic Resources;
2. Sustainable Use and Development: to implement policies and programmes for improvement of non-economic breeds, establishment of breed nucleus farms, supply of good quality semen and bulls and working with pastoral communities to guard against dilution of indigenous breeds and continued support for their breeding practices; and
3. The implementation of the plan would require collaborative efforts of NBAGR, the Department of Animal Husbandry, Dairying and Fisheries and the Ministry of Environment and Forests, at the Centre, Animal Husbandry Departments and Livestock Development Boards in each state, and universities, Civil Society Organizations, Breeder Associations and livestock keeping communities.

**Dr. D. K. Sadana's** paper illustrated the science of breeding in pastoral system. The main pillars of pastoralism rest on ecology, ecosystem, variability, breeding and their animal breeds. Studies conclude that pastoralists have a rich body of indigenous knowledge on breeding, selection of breed and the preventing of inbreeding. He saw the need for science to adopt a focused engagement on questions relating to landscapes and pastoral systems. He saw the need for formal science to closely interact with knowledge systems inherent within pastoral societies. Both have much learn from each other. He saw strong reason to support pastoral systems, on account of the strong cultural affinities and limited ecological footprint that pastoralist societies are responsible for.

**Dr. Mukesh's** paper dealt with the adaptation and the heat tolerance potential of native cattle. He stressed that diversity is necessary to meet future climate-related challenges and that developing countries may be better able to deal with these challenges owing to the greater genetic diversity they retain, compared with more developed countries. He spoke of the need for us to conserve the genetic uniqueness for coat colour, size, regional specificity, utility and historical traits. He spoke of the fact that Indian native cattle exhibit high allelic diversity and heterozygosity and differ greatly from exotic breeds at the genetic level. Over the course of a highly technical presentation, Dr. Mukesh used molecular data to demonstrate the scientific rationale and basis for why indigenous breeds such as the Sahiwal and Kankrej are better adapted to deal with heat compared with the Holstein-Friesian cattle. In a second example, he demonstrated the unique germplasm of Ladakhi cattle that enable it to adapt to the rigours of high altitude climates. The Chair suggested that this was extremely important work that needed to be made widely available through the reproduction of these arguments in language and form that might be more easily accessed by a lay audience.

**Dr. Hitesh** presented the importance of indigenous breeds in Ayurveda and human health. He highlighted some important examples of his research carried out during the course of his experience with Gujarat Ayurvedik University-Jamnagar.

**Dr. Ghotge** gave an account of the markets of the indigenous breeds. The market is a vibrant part of the rural economy; it is a cultural hub, a meeting place and is often associated with celebration and festivals. Anthra conducted studies in Karnataka, Gujarat, Maharashtra, Andhra Pradesh and Tamil Nadu on livestock markets and the general finding was one of non-uniformity of markets across the country apart from extremely well established supply chains. In most states meat markets were well established and people from minority and marginalized group seemed particularly well connected with meat and slaughter business. Recent changes visible in the market included a seeming preference for tender meat (small ruminants), an overall depression in wool markets, and a sharp decline in local breeds of small ruminants, corresponding with an increase in cross bred ruminants in these markets. She also made reference to the growing difficulty that farmers were facing in dealing with their ageing cattle, owing to restrictions on the sale of such animals.

The presentations in the first technical session were followed by a panel discussion with panelists Shri. Gopi Krishna (Mitan Handicraft), Dr. Ilse Kohler-Rollefson (LPPS), Mehardeen (Gojri Buffalo Breeder Association) and Umar Sama (Ram Rahim Kachchhi-Sindhi Ashvapalak Sahkari Mandali).

**Mehardeen** started the discussion, as a follow up to Dr. Mukesh's talk, by describing the Gojri Buffalo that are small in size and well adapted to travel from low to high altitudes.

**Dr. Rollefson** then talked about indigenous systems, consumer awareness and Breeders Associations. She spoke of the idea that the Indigenous system comprises of livestock keepers/ pastoralists, animals, soil, feed and that indigenous breeds lie at the intersection of these many themes. The breed cannot be seen outside the system. She said that our obsession with breeds – both indigenous and exotic — is leading to the ignorance of the indigenous systems that are responsible for the development of the breed in the first place. The third point she made related to the role that breeders associations need to play in the formation of rules and regulation for animal welfare. The formation of an association is just an initial step, standards and regulations needs to be implemented in each breeders association so that the livestock are well fed, enough milk is given to the calf and so on.

**Umar Sama** described the process of the formation of a cooperative society for the Kachchhi-Sindhi horse. Regular meets were held to mobilize people to form an association and for registration of the breed. The name Ram Rahim was suggested to include people of all religions.

**Gopi Krishna** spoke about the wool markets and the Kurba community. He suggested that in the past, wool was used locally and the surplus sent to Panipat for use by India's hosiery sector. Owing to the use of power loom and cheap imports the market for wool had declined and this had implications for the livelihood of these sheep-rearing communities . He urged the government and the Central Sheep and Wool Development Board to focus on wool development instead of just meat and to also focus on the revival of cooperative societies.

# Technical Session 2:

## Registration of pastoral breeds: policies, participatory documentation and process

This session was chaired by **Dr. Ilse Kohler-Rollefson** who introduced the session and then invited **Dr. D. N. Rank** of Anand Agricultural University (AAU) to make his presentation.

**Dr. Rank** described the role of Agricultural Universities in molecular characterization for potentially distinct breeds. He explained the role of university in education, extension and research. He gave a brief overview of the research being conducted in AAU. The molecular characterization (phenotypic and genotypic) programme for indigenous breeds of the western zone started in 1996 and as a result a number of pastoralist breeds are widely known today (among them Gir and Kankrej cattle; Patanwadi and Marwari sheep; Zalawadi and Gohilwadi goat; Kharai camel; Halari donkey; and Aseel poultry).

AAU is involved with a range of breed-related research, including micro-satellite analysis for identification of new breeds or strains, pedigree analysis, parentage verification and breed assignments. Speaking about AAU's research on the Gujarat-Malvi cattle breed, Dr. Rank pointed out that genetic characterization using microsatellite markers suggested high genetic variability in the population, and led to the conclusion that this was indeed a distinct breed. Likewise, AAU research also helped identify the Dumma sheep as genetically distinct from the Patanwadi and Marwari sheep breeds. AAU was an important collaborator with GoG-AHD and Sahjeevan in having the Banni buffalo recognized as a distinct breed. Two softwares – Goaty le and Kamdhenu – have been developed for breed assignments for goat and cattle, and a breed identification tool is available at the university website (<http://www.aau.in:81/home.html>).

The presentation was followed by a panel discussion of the representatives from different states. **Isa Bhai** (Banni Buffalo Breeders' Association) spoke about the formation of Banni Breeders Association and the role it played in characterization, and facilitating the recognition of the Banni breed, which subsequently led to higher economic returns both from buffalo breeding and from dairy. **Dr. Sadana** spoke about the roles that Sahjeevan played in the formation of the Banni Breeders association in 2010 that now includes approximately 1200 Maldharis from 48 villages of 19 panchayats. He then spoke of the collaborative effort by Sahjeevan, Sardakrushinagar Dantiwada Agricultural University (SDAU) and the Banni Buffalo Breeders' Association to track the data needed by NBAGR to assess the uniqueness of a breed. It was the first organized effort to develop and forward an application to NBAGR for the registration of a distinct breed. He also talked of how, following the recognition of the Banni Buffalo as a distinct breed, dairy collection centers were installed in Banni with the price of milk doubling, and in some instances, tripling over the past 7 years.

**Bishnu Chhetri** (KKKS) described their organization's work with the Siri cattle breed, which is native to Darjeeling, Sikkim, Bhutan and North Nepal. The breed is highly resistant to disease, has a

high degree of mobility, requires few health care inputs, and provides consistent milk yield (2 to 6 litres per day). The milk contains high fat and the ghee prepared from it sells for between INR 1500 and INR 3000/ kg. Compost from dung of the cow is highly valued by cardamom and vegetable cultivators in the region, and fetches INR 20-25 per kg. The key message conveyed in the talk was the need to understand pastoralism within the context of agriculture, and the possibility of promoting organic agriculture in particular. Shri Chhetri added that although the breed had been recognized, no further research or livelihood enhancement work had been undertaken; as a result, the potential returns from recognition and registration of the breed were not forthcoming.

**Hanuvantha** (Nalla Mala Cattle Breeders Association) emphasized the role of pastoralist breeders in the recognition and conservation of livestock breeds, and the need to view the process as being embedded in an integrated system consisting of pastoralists, the ecosystem they inhabit, breeds of livestock, traditional rearing and breeding practices, and the cultural ethos that nurtured all of the above. He used the case of the Nalla Mala cattle to make his point.

**Dr. Balaram Sahu** (Pathay Pathshala) spoke about Pathay Pathshala – a *pathshala* (school) that moves with pastoralists. The pathshala captures traditional knowledge and propagates it to different sections of society, offers training and methods to heal livestock diseases with home remedies, herbal pesticides for crops, and nature conservation strategies in general. He also spoke about the Chilika Buffalo that requires minimum management and feeds on brackish water biomass, a resource over which there are no competing demands. After the registration of this breed, Chilika buffalo milk prices have increased three-fold, from INR 13 to INR 39 per kg.

# Session 3: State experiences:

## Policies and programs on identification and importance of pastoral livestock breeds

The session was moderated by **Dr. D K Sadana** and **Dr. Sabyasaachi Das**, and the aim was to learn about state-level initiatives, policies and programmes for identification and conservation of pastoral livestock breeds.

Beginning with the state of Gujarat which has set an example in following a collaborative approach to registration of distinct breeds, **Dr. N. B. Prajapati** (Deputy Director of Animal Husbandry, Gujarat) talked about the roles played by different agencies in the registration of the Banni buffalo, from identification and characterization through registration and now conservation. It started with the Animal Husbandry Department (AHD), Gujarat initiating a special programme for recognition of lesser-known breeds, and providing seed funding to support the formation of a number of Breeders Associations. The State Agricultural University carried out the identification and selection of animals for physical characterization, production and reproduction parameters to be monitored; body measurements and molecular characterization.

The **Banni Buffalo Breeders' Association**, on its part, provided invaluable information relating to grazing and breeding practices, and on-the-ground support to all research and implementing agencies; Sahjeevan, which had been instrumental in holding together the process, compiled the breed profile for registration, which was then forwarded to the AHD, Gujarat. The department forwarded data on 7 different populations, including the Banni buffalo, to NBAGR as applications seeking registration of these populations as distinct breeds. The formation of the buffalo breeders association in the year 2008 was recognized as a critical milestone in the entire process; thereafter, the association facilitated collaboration between SDAU, AHD and the breeders. Formal registration of the Banni buffalo came through in 2010, leading to a number of development initiatives for buffalo breeders in the region. The state government has a provision of INR 15 lakhs each for the formation of breeders associations.

It was mentioned that in areas where such work revolves around threatened breeds, extra financial allocations are available from the government in support of conservation efforts. In addition, funds for livestock breed conservation could also be accessed under the Rashtriya Krishi Vikas Yojana (RKVY), provided the state AHD approaches RKVY at the planning stage.

**Mr. Ramesh Bhatti** (Programme Director, CfP) then spoke about the coordinated efforts of the State AHD, agricultural universities and NGOs in the recognition and registration of Gujarat's breeds. This collaboration has been ongoing for the past decade and has resulted in the registration of the Banni Buffalo in 2010, Kharai camel in 2015 and Kachchhi-Sindhi Horse in 2017. Applications for similar status are pending with NBAGR for the Kachchhi Horse, the Kahami goat, the Dumma sheep, the Kachchhi donkey, the Halari donkey, and the Nari Cattle.



A panel discussion followed these presentations with panelists from different states. Representatives of Government, civil society and pastoralists were present who spoke about the potential breeds in each state that needed to be surveyed for potential registration as independent breeds. These populations are listed in Appendix 3. A summary outline of the issues raised by workshop participants and presentations from state AHDs is provided below:

In response to queries about state-level efforts for ‘development’ of the Banni breed, it was stated that there were progeny farms being maintained by the department at Patan and in Bhuj.

A senior shepherd from Karnataka, **Neelkanth Mama**, felt that there had been much discussion on registration and conservation of breeds, but wanted to know what measures were being taken to sustain the system of rearing (pastoralism) under which these breeds had been developed. He suggested that an integrated approach to management of ecosystems, livelihood development, and breed conservation was essential for the system to flourish.

**Dr. J. P. Singh** from Uttar Pradesh suggested that a combination of culling and/or control of inferior bulls needed to accompany selective breeding as part of breed development. He also spoke of the challenge of maintenance and upkeep of unproductive bulls. In response to his intervention, it was stated that the GoG had allocated a sum of INR 10 crores to the Go-Seva and Gochar Vikas Board in Gujarat.

**Hanuman Ram Choudhary**, representative from SURE, an NGO in Rajasthan, shared their experience with conservation of the Tharparkar cattle breed, which is found in the north-west frontier region of India, and across the international border, in Pakistan. The organization is working in 32 villages with 4000 rearers of Tharparkar cattle, who come from Rabari, Jat, Rajput, and SC and ST communities. After formation of Milk Producers’ Cooperative Societies, which started in the year 2001, and systematization of milk procurement processes, the price per cow has increased over ten-fold over 15 years (INR 35,000-40,000 at present, as against INR 3000 in 2001).

**Dr. Satish Arora**, Project Coordinator (Tharparkar) from Rajasthan, shared about the government initiatives for pastureland development, sheep and wool development, and cattle development in the state. The state has eight native cattle breeds – Nagori, Kankrej, Tharparkar, Rath, Gir, Malvi, Sahiwal, and Nari. In a startling revelation, he shared that the Tharparkar semen was now being sourced from Kerala for breeding purposes. He mentioned the following populations with distinctive breed characteristics:

- Sojat goat, which is white in colour and found in Pali district of western Rajasthan; adult bucks of the breed weigh up to 70 kg, and fetch lucrative prices in livestock markets;

- Sindhi goat, originally from Pakistan, has no colour confirmation and is excellent for meat purposes (adult bucks weigh more than 100 kg). It is found in the Kapada-Sindhi-Bilala area of Jodhpur;
- Kheri sheep, for which there is ongoing work to have this recognized as a separate breed;
- A variation of the Murrah buffalo, with a characteristic white spot on its forehead. It may qualify as a distinct population, and needs further exploration; and
- Sanchori cow, found in areas adjoining Gujarat. The bull is vigorous, with long and sharp horns, and has been used for breeding in the interior areas of Rajasthan.

**Dr. Arora** also expressed concern over the collapse in market price of Nagori cattle, which has resulted in a significant decline in their numbers.

**Dr. Lakshman Rathore**, Additional Director, AHD-Rajasthan, discussed the potential of Malvi (in Kota division) and Chhoti Malvi (in Udaipur division) for further genetic study and the scope for these being registered as distinct breeds. He also mentioned the 'Pratapdhan' poultry population as a potentially distinct breed. He spoke of the fact Rajasthan holds over 80% of the country's camel population (3.25 lakhs), but spoke of the fact that these populations are in decline. The state government had instituted a disease-control and an incentives scheme for camel herders, offering age-linked cash awards for every calf born. Of the three breeds of camels found in the state, Bikaneri, Jaisalmeri, and Marwari, he said that the first two were already registered, and the process for registration the last was ongoing.

The case of the Marwari Horse was described to emphasize the role of royal patrons in breed conservation. The **All India Marwari Horse Society** organizes the annual Mallinathji/ Tilwara Horse Fair in south-west Rajasthan, which feature various competitions, trade activities, and other events, and bring together horse breeders from several states, with a passion for horses, and the Marwari horse in particular. The fair is thought to have played a key role in contributing to the horse's development and conservation. The AIMHS is the only breeders' association in Rajasthan.

**Dr. Sundarajan**, Joint Director, AHD- Tamil Nadu, shared information about pastoral breeds in the state, which included the following:

- Bargur cattle – there is an ongoing programme for selection and improvement of elite animals of the breed;
- Malaimadu cattle – the registration process is ongoing;

- Natukuttai cattle – the registration process is ongoing;
- Alambari cattle – found on the border of Tamil Nadu and Karnataka. A survey has been planned for and is expected to be undertaken soon;
- Kangayam cattle – field recording programme has begun; a Kangayam breeders' association has been formed;
- Toda buffalo – reared by the Toda community in the Nilgiri hills; and
- Kachhakattai Black sheep – measures for registration of the breed will be initiated shortly.

**Dr. Manjunath**, Additional Director, AHD-Karnataka, and **Dr. Maheshwarappa**, Deputy Director, Karnataka Sheep and Wool Development Corporation, described the indigenous breeds in Karnataka, which include the Malnad Gidda, Hallikar, Khillar, and Deoni, the last two being shared with Maharashtra. Among the cow breeds mentioned were Gavli, Krishna valley, which is an endangered breed, and the Amritmahal, for which a breeders association has been formed. The Registration process for the Nandidurga goat breed found in central Karnataka had started, and there was also the Bhidri goat, found in Bidar district on which work was yet to commence. Mention was also made of the Jowari buffalo in northern Karnataka, for which there was need to initiate work on its recognition and registration as a distinct breed.

More than 15 lakhs families were engaged in rearing sheep in Karnataka, and the state government was serious about conserving indigenous breeds of sheep. Dr. Maheshwarappa expressed concern over the declining numbers of the Bandu sheep breed, which now number a few thousands only. This was a result of rampant and indiscriminate cross-breeding with the Rambouillet. The state has one research farm dedicated to each sheep breed in the state –including the Hassan, Bellary, Deccani, and Mandya. In addition, there were distinct populations of Yellaga, Bagalkot, Belgaum, among others, which were yet to be formally recognized. The state has a “certified breeding unit” scheme, under which an incentive of INR 3000 is provided for every pure-bred indigenous ram held by a farmer in his/her herd.

The case in favour of registration of Jowari cattle was strengthened in a subsequent presentation by **Dr. Ashpak** from Future Greens, who described many unique characteristics of the population, including the fact that its milk has a fat content of between 5.4 and 8%. The bulls are reared by the Valmiki community, and breeding services are provided on demand, at a charge of between INR 300 and 500 per service.

**Dr. Shaik Aseef**, Assistant Director, Progeny Testing Project, Andhra Pradesh Livestock Develop-

ment Agency, said that two indigenous breeds of cattle – Ongole and Punganur – were being focused upon as part of the National Kamdhenu Breeding Centres programme, which was aimed at the conservation of indigenous bovine breeds. The Punganur population with farmers in particular has dwindled drastically, but a sizeable population is being maintained at the university. In recent times, the breeding policy has undergone a change, with semen of indigenous breeds such as the Ongole, Gir and Punganur being also used for AI, in addition to the exotic Jersey and Holstein-Friesian breeds. The state has one of the oldest breeders' associations, which was formed around the Ongole cattle breed (the Indian Ongole Cattle Breeders Association).

In Telangana, **Dr. A Vijay Mohan Rao** spoke about the fact that this was a recently formed state, with most registered breeds of livestock from the undivided state of Andhra Pradesh. Measures have been initiated for the registration of the following indigenous breeds:

- Kammavai cattle – found in Khammam district;
- Thurrupe cattle, found on the Eastern side of Krishna river; a fair is held every year on the third day after Diwali, where only males of the species are brought for trade; and
- Vandvari cattle, which is found in Warangal and Adilabad districts and for which a breed inventory has been prepared.

**Dr. Prem Kumar**, Project Director, Animal Breeding Farm, at Kalsi, in Uttarakhand, shared that the Badri breed of cattle found in interior hill areas of the state received formal recognition in the previous year; Badri is a small-sized cow and is reared under a zero-external input system. A bull-mother farm dedicated to the breed was being established at Champawat. Among small ruminants, there was the Udaipuri goat, also known as the '*pahari bakri*' among locals; it has a short hairless tail.

Describing the indigenous breeds recognition situation in Odisha, Dr. Balaram Sahu informed that 10 lesser-known breeds had been registered in recent times. Other populations that need to be accorded attention now include the following:

- Dinkia poultry, found in the hilly tracts of Koraput; it is robust and disease-resistant;
- Hajra poultry, found in Sundargarh district, and for which Deepak Deori, a breeder, received the Breed Saviour Award recently;
- Baneigarhi goat, also in Sundargarh district; and
- Rairakhol buffalo, which is semi-feral in nature.

**Dr. J. P. Singh**, Deputy Director, Uttar Pradesh Livestock Development Board talked about six indigenous breeds of cattle in the state of Uttar Pradesh, including Gangster, Kenkatha, Kherigarh, Mewati, Ponwar and Haryana – and two breeds of buffaloes – Murrah and Bhadawari. Breeder societies were being formed for the development and conservation of native breeds of cattle and other livestock in the state, such as the Jafrabadi goat in and around Jaunpur.

**Dr. Bishnu Chhetri** shared information about native breeds and distinctive livestock populations in the state of Sikkim and the North Bengal region:

- Siri cattle breed, which has been registered, and four breeder societies formed; and
- Raungo Dhap goat population; Pahare poultry; Jalpaiguri cow; and Coochbehari cow (that are yet to be registered as separate breeds).

**Dr. Chavan**, Additional Commissioner, AHD-Maharashtra, informed that there were 5 cattle, 3 buffalo, 4 goats, and 2 sheep breeds that had been registered in the state, and that breeders' associations have been formed for each of them. In an effort to enhance returns to primary producers and regulate prices of livestock, the state government had introduced trading of goats on live-weight basis (INR 240/kg), through APMC yards and markets. One of the native breeds identified and requiring urgent attention in the state was the Bhimthadi (also sometimes known as the Deccan) horse, found in Baramati district, and now almost extinct.

**Dr. Sunil Girame**, Additional Commissioner, Maharashtra, citing lack of communication as an issue hindering collaborative action, requested the creation of more platforms, and frequent interaction between government and non-government stakeholders. He also suggested that all the presentations made during the two-day workshop be shared with all participants.

**Mr. Akshay Jasrotia** from Himachal Pradesh cited the problem of grazing resources in Himachal Pradesh, where issuance of grazing permits was discontinued in 1970, and all common lands, including pastures and grazing lands were categorized as “forests”, impeding sustenance of traditional pastoral practices.

# Concluding Session:

## Way Forward and Recommendations

At the concluding session **Dr. Arjava Sharma** stressed that breed registration should be initiated by the communities and not by the scientists to ensure communities retain a sense of ownership over the whole process. He further spelt out that NBAGR was assessing a number of registration applications, including for the Bundelkhandi goat (the process has gotten delayed due to a conflict between Uttar Pradesh and Madhya Pradesh over the origin of the breed), Alambari and Malainadu cattle (Tamil Nadu), Naari cattle (Rajasthan), Dharwari buffalo and Jawari cattle (Karnataka) and the Kamalthapa cattle (Telangana). He felt that the fact that so many applications for breed recognition had been received by NBAGR pointed to great interest in furthering this agenda in the country, and something that NBAGR was fully supportive of.

**Shri Virmani** closed the session by emphasizing on the need for continued focus on this work to ensure there is no loss of momentum. He felt that the workshop had generated a high quality of discussion, and could serve as a useful launching pad for a further deepening of this work. He stressed the need for developing a collaborative process that would ensure participation of communities, with the assistance of regional agricultural universities and scientists. He also stressed on the need for this work to be continually held to the highest standards that NBAGR had put in place. He ended by calling for a collaboration between NBAGR, the Centre for Pastoralism and state Animal Husbandry Departments.

The following recommendations emerged from the final session:

1. Participants and various sessions highlighted the value of indigenous breeds from a variety of perspectives, including — climate change, value of waste material produced by indigenous breeds; the contribution of pastoral breeding to animal populations maintained by agricultural communities, dairies in various parts of the country and the meat economy.
2. Participants highlighted the various populations in their states that are likely to be distinct and worthy of investigation as distinct breeds.
3. Participants also described the various breeds that had been recognized and registered as distinct breeds, along with the programmes that state governments have put in place to incentivize the conservation of indigenous breeds.
4. All participants unanimously recognized the need to strengthen processes aimed at recognizing, registering and conserving indigenous breeds.
5. A number of states expressed interest in working with NBAGR and CfP to initiate work on such a program.



6. A decision was taken to have state level consultations in 3-4 states to start with, as a means of identifying populations that should be prioritized for further study, and for developing a methodology that might be followed in that state.
7. NBAGR expressed interest in being a part of this process.
8. NBAGR and CfP expressed interest in establishing an MoU to demarcate the roles and responsibilities each might take on in moving this process forward.
9. The suggestion that the government and the Sheep and Wool Development Board be engaged with to find ways to bring some more dynamism to the wool markets.
10. Recommendation that some of the more technical work that was shared by Dr. Mahesh and Dr. Rank be made more accessible to a lay audience, and something that CfP might attempt to do.

# Appendix 1: Background note

Most laboratory based breeding programmes breed animals for their capacity to produce milk and young ones. By way of contrast, pastoralists across the Indian subcontinent have bred animals from multiple perspectives, attempting to maximize both productivity as well as the animal's capacity to adapt to the climatically challenging environments they inhabit — drought, elevation, excessive rainfall and so on. Such intensely focused breeding is responsible for India's large diversity amongst its cattle, small ruminants, poultry, pigs, donkeys, camels and others.

Most of these are not recognized as distinct breeds and, instead, are characterized as “non-descript” – literally not described. Since government support for breeds and breeding programs is contingent on official recognition of breeds, the vast bulk of breeds that have been nourished and developed by pastoralist communities remain ignored with little if any support. In the absence of support, pastoralist systems stand the risk of dying out, and with them, India also stands to lose a significant part of its unique agro-biodiversity.

**Existing Interventions:** Sahjeevan in Gujarat has worked closely with state agricultural universities, state animal husbandry departments and ICAR's National Bureau of Genetic Animal Research (NBAGR) to obtain state recognition for indigenous breeds found in various parts of Gujarat. This has included the Banni Buffalo, now recognized as India's 11<sup>th</sup> Buffalo breed, the Kharai Camel, recognized for its unique ability to survive in mangrove ecosystems, and five other animals currently under consideration for such status by NBAGR. This work has now been extended beyond Gujarat, and includes an active partnership with the RRAN, involving technical support to ongoing work in Telangana and Malkangiri, Odisha. Telangana's State Biodiversity Board has invested in the registration of the Nalla Mala cattle, a popular draught animal among farmers in rain-fed parts of the Deccan plateau.

The formal recognition provided to the Banni Buffalo has prompted the Gujarat Government to invest in milk dairies in the Banni and in Kachchh resulting in tangible livelihood gains to the Maldhari pastoralists of the area. Equally important, there is growing acceptance within the state, of the need for system-level support for pastoralism, since the production system is now seen as responsible for the development of this breed. In consequence, there is now keen support within the state for the Maldhari application for community rights to manage the Banni, seen as a valuable breeding ground for the Banni Buffalo. This represents a change from an earlier perception of the Banni as extensive wasteland.

**Going Forward:** CfP sees breed recognition as a crucial first step in obtaining state support for both breeds and the pastoral production systems responsible for the development of these breeds. A preliminary survey suggests there are more than 100 breeds that yet to receive formal recognition.

Accordingly, CfP is looking to collaborate with a range of partner organizations in advancing such work in other parts of the country.

**National Workshop:** To facilitate this work, Sahjeevan has approached the Ministry of Animal Husbandry, and has obtained its support for its breed work as well as for the hosting of a national workshop on breed recognition. Formal letters to each state are being sent by the Department of Animal Husbandry, Government of India. We anticipate that state governments will be interested participants in this workshop.

The workshop “**Recognition, Registration and Conservation of Livestock Breeds in Pastoralist Eco-systems**” is being held on October 6-7, 2017 in Ahmedabad. Around 100 participants from ICAR, Animal Husbandry, Department of Government of India, Animal Husbandry Department Government of Gujarat, ICAR-NBAGR, agricultural universities, NGOs and pastoral communities are expected to attend.

**Workshop Objectives:** The workshop has three principal objectives:

- To share with participants the processes and outcomes of the breed recognition work undertaken in Gujarat and elsewhere over the past ten years;
- To understand current breeding policies and practices within each of the states participating in the workshop;
- To understand the current status of breed registration/recognition in participating states;
- To develop a mutually acceptable working methodology by which this work can be taken up across the country; and
- To obtain broad-based acceptance within participating state governments for supporting the proposed state-level work on breed recognition.

**Anticipated Outcomes:**

- Agreement amongst participating states on the need for undertaking such breed recognition and registration work;
- Consensus on a broad methodology to be followed in such work; and
- A roadmap for how such an agenda might unfold in a variety of states in the country.

# Appendix 2: List of Participants

NO.	NAME OF PARTICIPANT	DESIGNATION AND ORGANIZATION	STATE
<b>Government Representatives</b>			
1	Dr. A. J. Kacchiapatel	Director, AHD	Gujarat
2	Dr. Panchal	Regional Joint Director, AHD	Gujarat
3	Dr. N. K. Rohit	Regional Joint Director, AHD	Gujarat
4	Dr. K. P. Jadeja	Deput Director, AHD	Gujarat
5	Dr. B. P. Patel	Deputy Director, AHD	Gujarat
6	Dr. Narendra Prajapati	Deputy Director, AHD	Gujarat
7	Dr. K. G. Brahmxtariya	Deputy Director, AHD	Gujarat
8	Dr. Sersinh J. Chauhan	Veterinary Officer, AHD	Gujarat
9	Dr. Hardik Sharma	Veterinary Officer, AHD	Gujarat
10	Dr. Nisha Shah	Veterinary Officer, GLDB	Gujarat
11	Dr. Arajava Sharma	Director, NBAGR	Haryana
12	Dr. Manishi Mukesh	Principal Scientist, NBAGR	Haryana
13	Dr. M. T. Mannjunath	Additional Director, AHD	Karnataka
14	Dr. K. G. Maheshwarappa	Deputy Director, KSWDCL	Karnataka
15	Dr. P. S. Patel	Joint Director, AHD	Madhya Pradesh
16	Dr. M. S. Patel	Manager, State Breeding Farm, AHD	Madhya Pradesh
17	Dr. D. M. Chavan	Additional Commissioner, AHD	Maharashtra
18	Dr. Suneel G. Girawe	Assistant Commissioner, AHD	Maharashtra
19	Dr. Satish Asopa	CEO, RLDB	Rajasthan
20	Dr. Laxman Rathore	Additional Director, AHD	Rajasthan
21	Dr. K. S. Sundararajan	Joint Director, AHD	Tamil Nadu
22	Dr. Shaik Aseef	Project Coordinator, PTP	Telangana
23	Dr. Janardan Prasad	Deputy Director, ULDB	Uttar Pradesh
24	Dr. Prem Kumar	Project Director, Kalsi Farm, AHD	Uttarakhand

NO.	NAME OF PARTICIPANT	DESIGNATION AND ORGANIZATION	STATE
<b>Breeders and Pastoralist Representatives</b>			
25	Jata Veja	Breeder, Jafrabadi Buffalo	Gujarat
26	Purabhai Rajabhai	Breeder, Jafrabadi Buffalo	Gujarat
27	Amirbhai	Breeder, Jafrabadi Buffalo	Gujarat
28	Lakhamanbhai Ahir	Breeder, Kachchhi-Sindhi Horse	Gujarat
29	Rahimna Sama	Breeder, Kachchhi-Sindhi Horse	Gujarat
30	Shantiram Patri	Breeder, Dahodi Cattle	Gujarat
31	Hajabhai Kalotara	Breeder, Dumma Sheep	Gujarat
32	Rajubhai Rana	Breeder, Gir Cattle	Gujarat
33	Nathabhai	Breeder, Gir Cattle	Gujarat
34	Ranabhai Bharawad	Breeder, Halari Donkey	Gujarat
35	Savabhai Bharawad	Breeder, Halari Donkey	Gujarat
36	Halabhai Halepotra	Breeder, Kachchhi Donkey	Gujarat
37	Lakhamanbhai Ranabhai	Breeder, Kahmi Goat	Gujarat
38	Alabhai Karahanbhai	Breeder, Kahmi Goat	Gujarat
39	Godhabhai Sajanbhai	Breeder, Kahmi Goat	Gujarat
40	Naranbhai Bharawad	Breeder, Kankrej Cattle	Gujarat
41	Fatemamad Mutwa	Member, BPUMS	Gujarat
42	Musha J. Raysiputra	Member, BPUMS	Gujarat
43	Kaladhar Mutwa	Member, BPUMS	Gujarat
44	Isha M. Mutwa	Member, BPUMS	Gujarat
45	Ramajanbbhai	Member, BPUMS	Gujarat
46	Krimbhai Jat	Member, BPUMS	Gujarat
47	Ranabhai Rabari	Member, KUUMS	Gujarat
48	Karimbhai Jat	Member, KUUMS	Gujarat

NO.	NAME OF PARTICIPANT	DESIGNATION AND ORGANIZATION	STATE
49	Rameshbhai Koli	Member, Sheep-Goat Association	Gujarat
50	Samabha Ram	Pastoralist	Gujarat
51	Salemamad Halepotra	President, BPUMS	Gujarat
52	Naranbhai Rabari	President, Dumma Association	Gujarat
53	Jesangbhai Rabari	President, Maldhari Association	Gujarat
54	Vaghela Narapatsinh	President, Kachchhi-Sindhi Horse Association	Gujarat
55	Umar Shera Sama	Secretary, Kachchhi-Sindhi Horse Association	Gujarat
56	Mohd. Yaseem	Breeder, Gojari Buffalo	Himachal Pradesh
57	Mehar Din	Breeder, Gojari Buffalo	Himachal Pradesh
58	Lal Sadan	Breeder, Gojari Buffalo	Himachal Pradesh
59	Zahid Iqbal	Pastoralist	Jammu and Kashmir
60	Babu Falasira Sumakar	Breeder, Deccani Sheep	Karnataka
61	Nilkanth Kubhar	Breeder, Deccani Sheep	Karnataka
62	Hartingaram Raika	Breeder, Marwari Sheep	Rajasthan
63	Panelaram Raika	Breeder, Marwari Sheep	Rajasthan
64	Gordhan Gujjar	Pastoralist	Rajasthan
65	B. Vijaya Simman	Breeder, Bargur Cattle	Tamil Nadu
66	R. Mani Sekar	Breeder, Bargur Cattle	Tamil Nadu
67	G. Hanumantha Lambadi	Breeder, Nallamalla Cattle	Telangana
68	G. Laletha Lambadi	Breeder, Nallamalla Cattle	Telangana
<b>NGO representatives</b>			
69	Varsha Mehta	Mentor, CfP	Delhi
70	Vasant Saberwal	Director, CfP	Delhi
71	Punita Patel	Coordinator, Addvik Foods	Gujarat
72	M. S. Galuta	BAIF	Gujarat



NO.	NAME OF PARTICIPANT	DESIGNATION AND ORGANIZATION	STATE
73	S .M. Kamthe	BAIF	Gujarat
74	Dr. Arunmani Dixit	Mentor, CfP	Gujarat
75	Ramesh Bhatti	Programme Director, CfP	Gujarat
76	Sandeep Virmani	Mentor, CfP	Gujarat
77	Bhavana Deshai	MARAG	Gujarat
78	Neeta Pandya	Founder, MARAG	Gujarat
79	Kriti Khatri	Trustee, Sahjeevan	Gujarat
80	Aseem Mishra	Director, HIC Project, Sahjeevan	Gujarat
81	Dr. Pankaj Joshi	Director, Sahjeevan	Gujarat
82	Narendra Nandaniya	Livestock Inspector, Sahjeevan	Gujarat
83	Pravin Muchhdiya	Program Executive, Sahjeevan	Gujarat
84	Abadul Gani Sama	SETU-Abhiyan	Gujarat
85	U .J. Upadhaya	Trustee, SETU-Abhiyan	Gujarat
86	A. N. Kabhaliya	Coordinator, VRTI	Gujarat
87	M. L. Bariya	Director, VRTI	Gujarat
88	Dr. D. K. Sadana	Mentor, CfP	Haryana
89	Akshay Jasrotiya	President, HVAM	Himachal Pradesh
90	Pawna Kumari	HVAM	Himachal Pradesh
91	Ashapak Bagawan	Future Greens	Karnataka
92	Gopi Krishna	Managing Director, Mithan	Karnataka
93	Dr. Nitya Ghotge	Director, Anthra	Maharashtra
94	Dr. Balaam Sahu	Founder, Pathey Pathsala	Orissa
95	Dr. Ilse Kohler-Rollefson	Director, LPPS	Rajasthan
96	Sukram R. Nirama	Coordinator, Prakriti Foundation	Rajasthan
97	Hanuman Ram Choudhary	Programme manager, Barmer, SURE	Rajasthan
98	Bishnu Chhetry	Director, KKKS	Sikkim

NO.	NAME OF PARTICIPANT	DESIGNATION AND ORGANIZATION	STATE
99	Dr. Sabyasachi Das	Mentor, CfP	Telangana
100	P. Meghavardhan	Field Coordinator, CONARE	Telangana
101	Dr. A. Vijay Mohan Rov	Livestock Advisor, WASSAN	Telangana
102	Amit Rathi	Fellow, RLEK	Utarakhand
<b>Academics</b>			
103	Dr. D. N. Rank	Head, Veterinary College AAU	Gujarat
104	Dr. Hitesh Jani	Professor and Head, Ayurvedik collage	Gujarat
105	Dr. Ashish C. Patel	Assistant Professor, AAU	Gujarat
106	Dr. Ashavin J. Patel	Veterinary Officer, AAU	Gujarat
107	Shiven Patel	M.V.Sc Student AAU	Gujarat
108	Dhruv Bhatia	M.V.Sc Student AAU	Gujarat
109	Debanjana Dey	PhD student, NISTADS	New Delhi
110	Prof. Rajeshwari Raina	Shiv Nadar University	Uttar Pradesh
<b>Others</b>			
111	Jaysokn Shiyani	Reporter, DD News	Gujarat
112	Kavita Mehta	Consultant	Gujarat
113	Niran Panchar	Tour Guide	Gujarat
114	Urvashi Panchar	Heritage tour guide	Gujarat
115	Dr. Rajeshwaran	Livestock Advisor	Tamil Nadu

# Appendix 3:

## List of potential populations to be studied for registration as separate breeds

STATE	POTENTIAL POPULATIONS AWAITING RECOGNITION	
	POPULATION	STAGE OF REGISTRATION
Rajasthan	Sojat Goat	Not started
	Sindhi Goat	Not started
	Kheri Sheep	Ongoing
	Nari Cattle	Descriptor Prepared
	Sanchori Cattle	Not started
	Malvi Goat	Not started
	Pratapdhan Poultry	Not started
Tamil Nadu	Alambadi Cattle	Will start soon
	Malaimadu Cattle	In process
	Natukuttai Cattle	In process
	Kachhakattai Black Shee	Will start soon
Karnataka	Nandidurga Goat	In process
	Bhidri Goat	Not started
	Jowari Buffalo	Not started
	Yellaga Sheep	Not started
	Bagalkot Sheep	Not started
	Belgaum Sheep	Not started
Telangana	T hurrupu Cattle	In process
	POPULATION	STAGE OF REGISTRATION
Uttarakhand	Vandvari Cattle	In process
	Kammavai Cattle	In process
	Udaipuri (pahari) Goat	Not started
Orissa	Dhinkia Poultry	Not started
	Hajra Poultry	Not started
	Baneigarhi Goat	Not started
	Rairakhol Buffalo	Not started
West Bengal	Pahari Poultry	Not started
	Rongodhat Goat	Not started
	Coochbihari Cow	Not started
Maharashtra	Bhimtari Horse	Not started
Sikkim	Raungo Dhap Goat	Not started

## Organisers



## Co-Organiser



## Sponsors



## In Collaboration with



