DEDICATED TO ANIMAL GENETIC RESOURCES OF INDIA

भाकृअनुप–रापअनुसंब्यूरो समाचार-पत्र
ICAR-NBAGR Newsletter

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From the Director's Desk

Greetings from ICAR-NBAGR!

I am delighted to connect with you through the newsletter of the ICAR-National Bureau of Animal Genetic Resources (NBAGR). As the sole national institution entrusted with the crucial responsibility of safeguarding India's unique livestock and poultry germplasm, we remain committed to our scientific pursuits in the identification, characterization, conservation, evaluation, and sustainable utilization of Animal Genetic Resources (AnGR).

During the reported period, NBAGR has made remarkable progress in its mission to document and conserve indigenous AnGR. Our ambitious target towards zero non-descript AnGR in our country remains a driving force behind our efforts. To realize this goal, we have undertaken a nationwide survey in collaboration with State Animal Husbandry Departments (AHDs), State Agricultural Universities (SAUs), NGOs, and various stakeholders. This collaborative approach allows us to sensitize and engage the entire livestock rearing community, ensuring their active participation in our shared responsibility.

We firmly believe in the power of continuous learning and recognize the value of involvement from all our stakeholders. Our dedication has led us to make significant strides in identifying and characterizing native animal germplasm across India, even in the most remote corners of the country. We have gone to great lengths, surveying challenging terrains like Ladakh, to achieve our targets. Additionally, we have organized interface meetings with state animal husbandry departments and universities to sensitize them about native AnGR and devise strategies for their documentation. Through surveys conducted in 14 states, we have successfully identified 13 new homogeneous populations. These efforts have deepened our understanding of the incredible genetic diversity and genomic uniqueness present in our native breeds. I am pleased to share that we have registered ten new breeds of indigenous livestock species in the country, bringing the total number of registered indigenous breeds to 212.

Our commitment to cutting-edge research has yielded remarkable outcomes. Through advanced genomic approaches, we have accomplished significant milestones in our scientific endeavors. Notable achievements include whole genome sequencing of Changthangi goat for identification of selection footprints, comparative skeletal muscle transcriptome profiling of Indian chicken, and understanding the molecular basis of seasonal variation in seminal attributes of buffalo bulls. These advancements further our understanding of the unique traits exhibited by indigenous livestock and poultry, enabling us to add value to our native breeds and ensure their long-term sustainability.

Furthermore, our research contributes to the effective management and conservation of valuable resources. In line with our commitment to assess the risk status of indigenous breeds, NBAGR introduced the Breed Watchlist-2022. This watchlist serves as a valuable indicator for prioritizing the conservation and efficient management of AnGR. I am delighted to share that out of a total of 38 indigenous breeds at risk, we have successfully cryopreserved nineteen at the National Gene Bank of the institute. Additionally, we proudly honor individuals and institutes through the "Breed Conservation Awards-2022" for their exceptional contributions to conserving the animal genetic resources of the country.

During the reported period, we celebrated the foundation day of the institute and organized the SOCDAB conference, providing platforms for knowledge exchange and collaboration. We also conducted a five-day training program on Capacity Building of Field Veterinary Officers on the Management of Indigenous Domestic Animal Diversity. These initiatives underline our dedication to engaging with the real custodians of Animal Genetic Resources—the resilient animal farmers who form the backbone of our livestock sector.

I extend my heartfelt appreciation to our dedicated scientists, whose firm conviction, unwavering dedication, and professionalism have played a pivotal role in fulfilling NBAGR's responsibility of protecting our precious national livestock biodiversity. Their relentless pursuit of knowledge and commitment to excellence are truly commendable. I would also like to acknowledge the enthusiasm and support provided by our diligent staff, as well as the invaluable contributions of stakeholders and community members. It is through their collective efforts that we can achieve our shared vision.

As we move forward, I am confident that, with your valuable suggestions and collaboration, ICAR-NBAGR will continue to excel in all spheres of our mandate. Your feedback and input are essential in shaping the future of our institution. Please feel free to reach out to me directly at director.nbagr@icar.gov.in.

With warm regards,

[B.P. Mishra]

HIGHLIGHTS OF THIS ISSUE...

Editors: Rekha Sharma, Sonika Ahlawat and MS Dige
Compilation: P S Dangi, CTO, PME Cell
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Production Assistance: Anita Chanda, PA, PME Cell

ICAR-NATIONAL BUREAU OF ANIMAL GENETIC RESOURCES
G.T. Road By-Pass, Near Basant Vihar, Karnal-132 001 (HARYANA) INDIA
Tel. 0184-2961000, Fax: 0184-2960460
Email: director.nbagr@icar.gov.in | Website: https://nbagr.icar.gov.in
Twitter: @IcarNbagr

Institute Profile

With the realization of the unique significance of native animal and poultry genetic resources and their potential utilization at global level, a need was felt by the ICAR in 1960s for establishing an organization which could undertake the responsibility of evaluating, certifying and conserving the country's rich and diverse germplasm resources. The establishment of two different institutes- National Bureau of Animal Genetic Resources (NBAGR) and National Institute of Animal Genetics (NIAG) was approved, in principle, during IV Five-Year-Plan. The Institute was set up on 21st September, 1984 at the campus at National Dairy Research Institute (Southern Regional Station), Bangalore and further shifted to Karnal on 19th July, 1985. Finally, NBAGR and NIAG were merged in 1995.

Mission

To protect and conserve indigenous Farm Animal Genetic Resources for sustainable utilization and livelihood security.

Mandate

- Identification, evaluation, characterization, conservation and sustainable utilization of livestock and poultry genetic resources of the country.
- Coordination and capacity building in animal genetic resources management and policy issues.

Objectives

- To conduct systematic surveys to characterize, evaluate and catalogue farm livestock and poultry genetic resources and to establish their National Data Base.
- To design methodologies for *ex-situ* conservation and *in-situ* management and optimal utilization of farm animal genetic resources.
- To undertake studies on genetic characterization using modern techniques of molecular biology.
- To conduct training programmes as related to evaluation, characterization and utilization of animal genetic resources.

Major activities

Identification, characterization and documentation of native AnGR in country

- Survey and documentation of entire livestock and poultry population in the country with a target of Zero Non- Descript AnGR.
- Identification and characterization of homogenous populations qualifying for breed.
- Registration and notification of all types of livestock and poultry populations.

Conservation of native breeds of livestock and poultry species

- *In situ* conservation of threatened breeds of livestock and poultry.
- Cryopreservation of germplasm of all registered breeds
- Assessing risk status of native breeds.

Genomics for population structure and diversity of native AnGR

- Assessing genomic diversity and uniqueness of all registered livestock and poultry breeds.
- Developing molecular signature for breed standard of native breeds.
- Creation of genome assemblies for native breeds of high importance.

Trait identification and characterization of native AnGR for value addition

- Characterization of unique products and identification of biomolecules in milk and meat of native germplasm and their effect/utility for human nutrition and health.
- Transcriptome and metabolome for evaluating adaptive and endurance traits of native breeds.

Policy support and capacity building for AnGR management

- Creation of databases and other ICT on AnGR for policy support in the country.
- Developing policy support for AnGR management in states.
- Organizing training and sensitization programs for AnGR management.
- Providing consultancy services to government agencies for policy support.

Sectoral News

The Food and Agriculture Organization of the United Nations (FAO) is organizing the first ever Global conference on Sustainable Livestock Transformation (GC-SLT) with the theme "Better production, better nutrition, better environment, better life", from 25 to 27 September, 2023. The GC-SLT will provide a neutral forum for FAO members, producers, scientists, development agencies, policy makers, civil society, opinion leaders and the private sector to engage in dialogues on innovations and pathways to efficiently produce more nutritious, safe and accessible animal source foods with a reduced environmental footprint, and contribute to vibrant local and diversified livestock systems that are more resilient to shocks and disruptions.

The conference covers **four main themes:**

- **Better livestock production systems:** encompassing management and use of feed and animal genetic resources, animal health and welfare, digitalization and precision livestock farming;
- **Animal source food for better nutrition:** presenting the state-of the-art knowledge on the contribution of animal source food to food security and nutrition and healthy diets;
- **Livestock solutions for better environment:** sharing information about good practices and initiatives to make optimal use of natural resources and reduce greenhouse gas emissions;
- **Better life:** including how to support small-scale livestock producers to transition to sustainable livestock production, through appropriate services and policies.

The event is expected to generate evidence for actions towards the realization of the goals of the FAO Strategic Framework 2022-31 for the transformation to MORE efficient, inclusive, resilient and sustainable agrifood systems for better production, better nutrition, a better environment and a better life, leaving no one behind, thus contributing to achieving the Sustainable Development Goals (SDGs), especially SDGs 1, 2 and 12. Detailed information is available at **LivestockConference@fao.org.**

Mission Activities

Mission towards Zero Non-descript AnGR of India

ICAR-NBAGR has initiated the 'Mission towards zero non-descript AnGR (Animal Genetic Resources)' in India. It aims to identify potential breeds among native livestock and poultry genetic resources. Mission will contribute in reducing the percentage of the non-descript AnGR population in the country. This mission was launched on 11th August, 2021 by Dr. T Mohapatra, Secretary, DARE & Director General, ICAR. Since then Bureau has organized Interface meet with 12 states-Chhattisgarh, Jharkhand, Maharashtra, Rajasthan, Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, West Bengal, Himachal Pradesh, Bihar, Telangana and one Union Territory (Ladakh). Similarly, 17 institutional projects encompassing 22 States/UT of the country were initiated.

Interface Meet under the Zero Non-descript AnGR Mission

The 13th State-Interface meet between ICAR, Department of Animal Husbandry & Fisheries Resources (DAH&FR), Govt. of Bihar and Bihar Animal Science University (BASU) was successfully organized on July 30, 2022 in Patna. The theme of the meeting was "Characterization and Documentation of Animal Genetic Resources of Bihar: A Mission towards Zero Non-Descript Population". Dr. N. Saravana Kumar, Secretary, DAH&FR chaired the meeting and congratulated the ICAR for undertaking such an important mission for the benefit of the society. Dr. B.P. Mishra, Director, ICAR-NBAGR, Karnal, highlighted the importance of native AnGR in providing food and economic security to the farmers over and above their role in ecosystem services and biodiversity management. Dr. Rameshwar Singh, VC, BASU, Patna emphasized the need of improving and conserving native breeds. More than 100 delegates including scientists of ICAR-NBAGR, RCER, academicians of BASU, and veterinary officers of Animal Husbandry & Fisheries Resources Department attended the Meet.

Interface Meet on Mission Zero Non-descript AnGR at Patna, Bihar

Characterization of Native Populations

In 2022, surveys were conducted in 14 states - Himachal Pradesh, Uttar Pradesh, Madhya Pradesh, Rajasthan, Chhattisgarh, Odisha, Tamil Nadu, Maharashtra, Bihar, Arunachal Pradesh, Mizoram, Nagaland, Sikkim, Meghalaya and Ladakh (UT) in collaboration with SAHD, KVKs, and SAUs/SVUs. Thirteen new populations were identified across eight states - Lahuri goat and Dang sheep of Madhya Pradesh, Combai dog of Tamil Nadu, Mahi cattle and Vagadi goat of Rajasthan, Eki dog of Arunachal Pradesh, Battisi goat and Rampur Hound dog of Uttar Pradesh, Malkanagiri pony, Burudi and Gola pig of Odisha, Simanchal sheep and Sitamrhi goat of Bihar. Timelines and milestones of the Mission Zero Non-descript AnGR of India are being achieved successfully as 24 new populations have been identified for detailed characterization till now.

Ten new populations belonging to seven states have been characterized during 2022. These included -Native Lahuri goat and Dang sheep of Chambal region of Madhya Pradesh, Sikkimese yak of Sikkim, Combai dog of Tamil Nadu, Changkhi dog of Ladakh, Masilum cattle and WakChambil pig of Meghalaya, Sarguja goat of Chhattisgarh, Mahi cattlle and Vagadi goat of Rajasthan.

Vagadi goat

Mahi Cattle

Combai dog

State Network Units

Three centres were initiated under the Network Project on AnGR: ICAR -Research Complex of Eastern Region, Patna, Bihar; Maharashtra Animal & Fishery Science University, Nagpur, Maharashtra, and State Animal Husbandry Department, Arunachal Pradesh. The populations identified by these centers are being characterized in detail following a systematic survey using standardized questionnaires.

Research Accomplishments

Registration of 10 New Breeds of Indigenous Livestock

The ICAR-NBAGR has recently registered ten new breeds of indigenous livestock species in the country. These include Kathani cattle of Maharashtra, Sanchori cattle of Rajasthan, Masilum cattle of Meghalaya, Purnathadi buffalo of Maharashtra, Sojat, Karauli and Gujari goat of Rajasthan, Banda pig of Jharkhand, Manipuri Black pig of Manipur and WakChambil of Meghalaya. The total number of registered indigenous breeds has risen to 212 after the registration of these breeds. These include 53 cattle, 20 buffalo, 37 goat, 44 sheep, 7 horses & ponies, 9 camel, 13 pig, 3 donkey, 3 dog, 1 yak, 19 chicken, 2 duck and 1 geese breeds.

Newly registered breeds

Accession No.: INDIA_BUFFALO_1100_PURNATHADI_01020

Purnathadi buffalo is found in the Vidarbha region of Maharashtra state. It is a medium-sized buffalo with whitish to light brown coat colour. Leg extremities and tail switch are white. Horns are long with a hook like appearance at the end. Milk yield ranges from 353 to 1533 kg in a single lactation. The milk fat ranges from 6.5 to 11.5%.

Accession No.: INDIA_CATTLE_1100_KATHANI_03051

Kathani is a dual-purpose cattle primarily distributed in the Vidarbha region of Western Maharashtra. The Kathani cattle possess good draft ability, making them well-suited for paddy cultivation on marshy land.

Accession No.: INDIA_CATTLE_1700_SANCHORI_03052

Sanchori is a medium-sized cattle breed known for its high milk production. It is distributed in the Jalore district of Rajasthan. The majority of Sanchori animals have a white colour. The average daily milk yield is around 9 kg with 2769 kg of milk in a single lactation.

Accession No.: INDIA_CATTLE_1300_MASILUM_03053

Masilum is a small but robust cattle breed of Meghalaya. These cattle are well adapted to the hill ecosystem and are traditionally reared by the Khasi and Jaintia communities for various purposes, including sports, manure and socio-cultural festivals.

Accession No.: INDIA_GOAT_1700_SOJAT_06035

Sojat is a large dual-purpose goat breed; reared for both meat and milk purposes. Sojat is mainly distributed in the Pali, Jodhpur, Nagaur, and Jaisalmer districts of Rajasthan. Adult male have an average weight of about 60 kg. Females produce an average of around 1 kg milk per day.

Accession No.: INDIA_GOAT_1700_KARAULI_06036

Karauli is a medium to large-sized goat breed, reared for its meat and milk production. It is distributed in the Sawai Madhopur, Kota, Bundi, and Baran districts of Rajasthan. The average adult weight in males is about 52 kg, while the average daily milk yield is 1.5 kg.

Accession No.: INDIA_GOAT_1700_GUJARI_06037

Gujari is a large-sized, dual-purpose goat breed found in Rajasthan. These goats have mixed coat colour of brown and white with white markings on face, leg, and abdomen. Adult male weigh around 69 kg while females weigh around 58 kg. The average daily milk yield is 1.62 kg.

Accession No.: INDIA_PIG_2500_BANDA_09011

Banda pig is a native breed of Jharkhand, mainly reared for pork and manure. These pigs have black coat colour, and short, erect ears. Adult males have an average body weight of around 28 kg and females weigh around 27 kg in. Litter size ranges from 4 to 7 piglets.

Accession No.: INDIA_PIG_1200_MANIPURIBLACK_09012

Manipuri Black is a native pig breed of Manipur state, mainly reared for meat. Adult males have an average body weight of about 96 kg while females weigh around 93 kg. Litter size ranges from 6 to 11 piglets and meat is preferred by local people for its taste.

Accession No.: INDIA_PIG_1300_WAKCHAMBIL_09013

WakChambil is a small-sized pig breed with a round and pendulous belly. It is mainly distributed in the Garo Hills of Meghalaya. The pork from Wakchambi pigs is known for its unique flavour and taste and is cherished during religious and ceremonial occasions by local people. The average adult body weight is around 32 kg in males. Litter size at birth ranges from 4 to 11 piglets.

Indigenous Livestock and Poultry Breed Watchlist

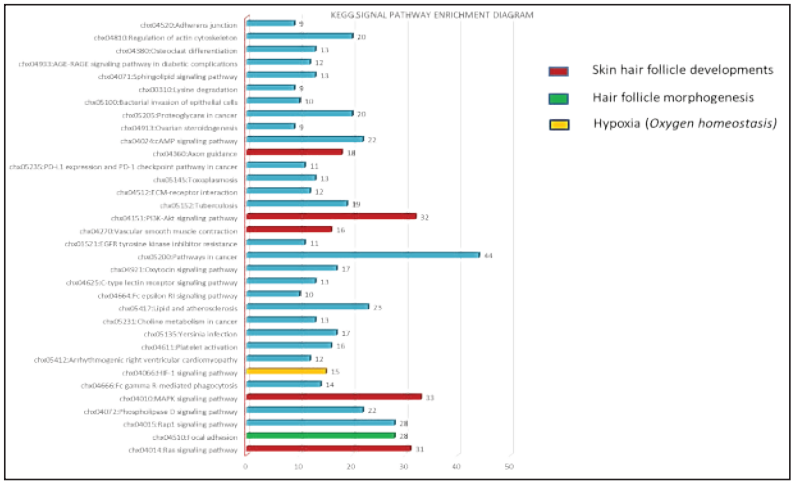
Breed Watchlist-2022 was prepared for assessing the risk status of indigenous breeds. The risk assessment was based on 20th Livestock Census population data in the Breed wise Report of Livestock and Poultry published by Dept. of Animal Husbandry & Dairying (DAHD), MoFAHD, Govt. of India in 2022. It was released on 21st September, 2022 by Deputy Director General (Animal Science), ICAR. Thirty eight indigenous breeds are under the category of 'at risk' as per 2013- FAO guidelines. Among these breeds, 14 breeds are categorized as 'vulnerable', 19 breeds as 'endangered', and 5 breeds as 'critical'. Germplasm (semen/somatic cells/ova) of the 19 indigenous 'at risk' breeds has been cryopreserved at the National Gene bank of the Bureau.

Ex-situ Conservation of AnGR

The National Gene Bank at ICAR-NBAGR is strengthening its germplasm repository by preserving a diverse range of animal germplasm (semen, somatic cells, and DNA) of indigenous livestock and poultry. Cryopreservation was done for the 29 indigenous breeds at National Gene Bank, fulfilling SDG NIF 2.5.1. These included 30,660 semen doses of 15 breeds (Red Kandhari, Nimari, Deoni, Gaolao, Bhinjharpuri, Ghumsari, Khariar cattle; Ganjam, Jamnapari, Beetal, Berari, Osmanabadi, Sirohi, Sangamneri and Barbari goat and 1,200 vials of somatic cells of 10 breeds (Mewati, Hariana, Ladakhi and Shweta Kapila cattle; Konkan Kanyal and Changthangi goat, Agonda Goan Wak Chambil and Niang Megha pig, Mewati camel), and 95 oocytes (vitrified) of 5 native breeds- Changthangi, Bhakarwal goat, Gurej, Changthangi and Karnah sheep. Currently, the national repository holds cryoconserved semen of 59 and somatic cells of 33 indigenous livestock breeds.

Whole genome sequencing of Changthangi goat for identification of selection footprints

The goat (*Capra hircus*) is one of the earliest domesticated livestock species, primarily raised for milk, meat, hair, cashmere, and skin to meet human needs. The current research aimed to detect genetic variations of Changthangi goat and to examine selection footprints related to hair/fibre quality. To explore genetic composition, whole genome re-sequencing (~10X) of 10 Changthangi goat samples from Ladakh (UT) was performed using the Illumina NOVASEQ 6000 platform with 150 bp paired-end chemistry. Whole genome resequencing data for 10 Angora goats was downloaded to compare the genomic variants with the Changthangi goat. A total of 22.5 million single nucleotide polymorphisms (SNP) and 3.5 million insertions and deletions (INDEL) were identified in the Changthangi goat genome. Selection footprints were studied using various approaches such as the composite likelihood ratio (CLR), nucleotide diversity (θπ), and fixation index (F_{ST}) approaches. By utilizing the top 1% of selection signatures, we identified 1276 genes using CLR, 206 genes using θπ, and 700 genes using F_{ST}. Several candidate genes that are under selection pressure were identified, including FGF5, FGF9, KRT17, KRT71, STK3, TCF7L1, FGF20, SOX10, CUX1, and IGFBP7. These genes may play a role in qualities associated with hair or fibre, as well as adaptive traits (NOS2, PRKCB). Significant enrichment of KEGG pathways like Ras signaling pathway, MAPK signaling pathway, and Focal adhesion, which are associated with skin hair follicle development and hair follicle morphogenesis, were identified. The enrichment of the HSF-1 signaling pathway in the top selection signatures further supports the Changthangi goat's adaptation to the hypoxic environment at high altitudes.

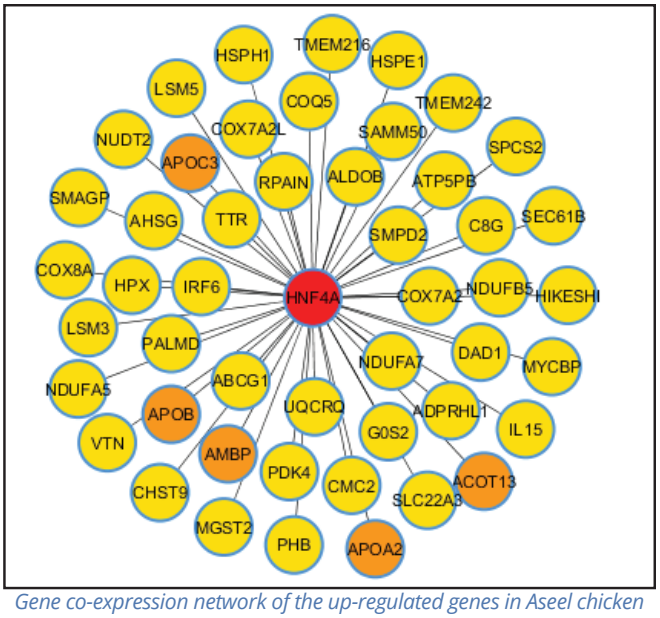


KEGG signal pathway enrichment diagram. Numbers to the right of columns indicate the number of genes enriched by each signaling pathway; red boxes: Signaling pathways involved in the development of skin hair follicles. P<0.05.

Comparative skeletal muscle transcriptome profiling of the fighter-type Aseel and meat-type Punjab Brown chicken of India

The diverse agro-climatic zones of India are home to 19 registered chicken breeds that are important for the nutritional and livelihood security of millions of rural households. The phenotypically and geographically diverse chicken breeds of Indian present ample scope to identify genes related to the traits of economic importance and adaptation to specific environments. In this study, comparative skeletal muscle transcriptome analysis was carried out for Aseel, a fighter type breed and Punjab Brown, a meat type breed of India. The RNA Seq data was generated for four biological replicates of each breed. Genes with highest expression in both breeds were *ACTA1, GAPDH, MYL1, TTN* and *TNNT3* which are associated with muscle contraction and motor activity. A total of 961

up-regulated and 979 down-regulated genes were identified in Aseel at a threshold of $\log_2$ fold change ≥ ±2.0 (P_{adj}<0.05). The KEGG pathways significantly enriched in Aseel included metabolic pathways and oxidative phosphorylation (OXPHOS). The most striking observation for the DEGs was the higher expression of genes representing mitochondrial respiratory chain complex assembly (I, III and IV) and ATP synthesis coupled proton transport in the fighter type Aseel birds. Various metabolic pathways involving respiratory electron transport, citric acid (TCA) cycle, and aerobic respiration were enriched in these birds. Genes associated with fatty acid beta-oxidation (*ACAA2, ECI1, ECHDC2, HADH, DECR1,* and *ACAT1)* and response to oxidative stress (*GPX1, GPX7, GPX8, NDUFA6, NDUFA12, NDUFB4, RCAN1, PRDX1,* and *ATOX1*) also showed higher expression in Aseel. The findings of our study point to the enrichment of OXPHOS system, which is majorly responsible for cellular ATP production in the Aseel gamecocks.

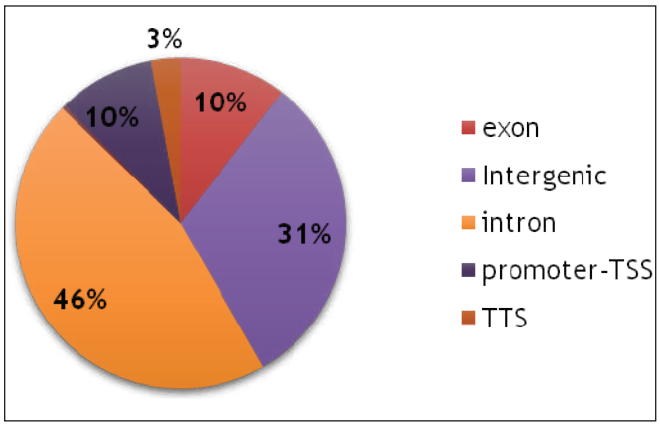


Gene co-expression network of the up-regulated genes in Aseel chicken

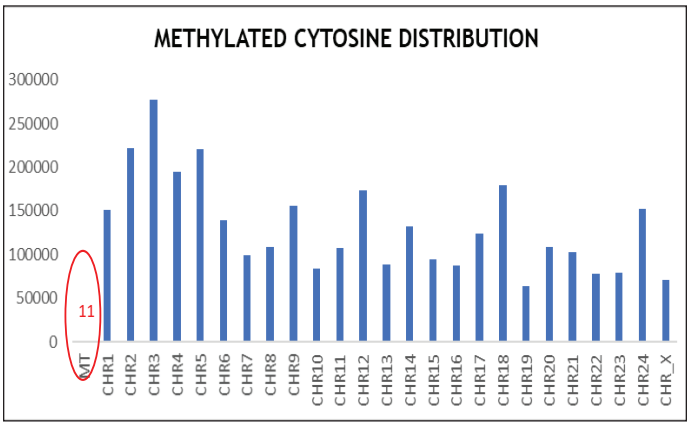
Epigenomic changes in buffalo sperm cells due to heat stress

Based on the semen quality parameters recorded during hot summer season, Murrah buffalo bulls under semen production at ABRC of NDRI, Karnal, were classified into seasonally affected (SA) and non-affected (SNA) due to heat stress. DNA was isolated from the Bovipure density gradient purified sperm cells and genome wide methylation data generated on heat stress affected and non-affected groups of bulls, using RRBS technique. The functional enrichment during epigenome data analysis, identified hypermethylated CpG sites in the promoter region of the genes associated with pathways like oocyte meiosis, MAPK signalling and oxytocin pathways, which may affect processes like sperm cell differentiation, spermiation, and sperm morphology in seasonally affected buffalo bulls.

In the differentially methylated cytosine (DMCs) list, 58 genes were found to be occurring in the 'meiosis' pathway with an enrichment score of 1.3 and Benjamini adjusted P value 0.022. Among the these, 8 genes were found to be methylated in the promoter region. Across the spermatogenesis associated genes, TEX29, SEPT9-SEPT6-SEPT4, CCR7 and unidentified locus LOC102397479 were top hypomethylated and NPTN, CEP170B, ANO1, RPL31 and GRAMD4 were identified as major genes with hypermethylated CpGs in the promoter region of summer stress affected animals. DAZL, SPATA17, and SPATA19 were found to be hypermethylated at the CpG sites in the intergenic regions.



Distribution of DMCs in the annotated regions of buffalo sperm cell DNA



Chromosome-wise distribution of differentially methylated cytosinesinseasonally affected and non-affected bulls (MT- Mitochondria)

Important Activities

Interactive Meet with Animal Husbandry Statistics Division, DAHD

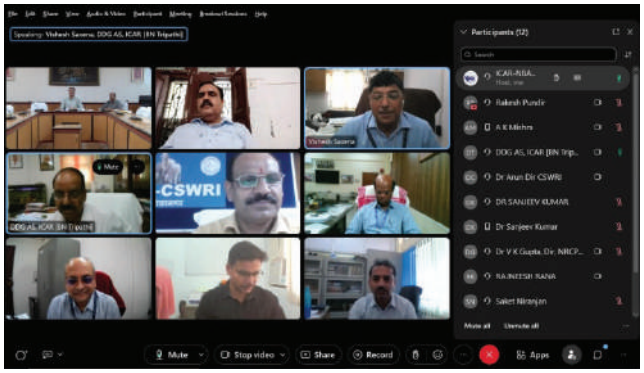
An interactive meeting for "Preparatory Activity of 21st Livestock Census" was held between Animal Husbandry Statistics Division, DAHD, GoI, and ICAR-NBAGR on 22nd November 2022 at ICAR-NBAGR, Karnal. A team of officers led by Dr. Sumedh Nagrare, Advisor (Stat.), DAHD interacted with the Director and scientists to discuss technical modalities for conducting the Breed-wise Livestock Census.

Training for Field Veterinarians

Five days training program on "Capacity Building of Field Veterinary Officers on Management of Indigenous Domestic Animal Diversity" was organized online by ICAR-NBAGR, Karnal from 14-18th November, 2022. A total of 52 participants from 15 state Animal husbandry departments and three Union Territories attended the training. The training has a broader theme of characterization and conservation of indigenous AnGR and appropriate interventions for their sustainable utilization. More than 20 lectures were delivered, which were compiled and published as an e-book entitled "Advances in Management of Animal Genetic Resources". The training was sponsored by MANAGE (National Institue for Agriculture Extension Management), and was coordinated by Dr. Raja KN, Dr. Sonika Ahlawat and Dr. MS Dige from ICAR-NBAGR and Dr. SS Deshmukh from MANAGE, Hyderabad.

Meeting of ICAR-Breed Registration Committee

The 10th meeting of "The ICAR-Breed Registration Committee" was held on August 31, 2022 (online) to discuss and register indigenous breeds of various livestock species. The meeting was chaired by Dr. BN Tripathi, DDG (Animal Science), ICAR. Dr. Praveen Malik, Animal Husbandry Commissioner, DAHD, Govt. of India, Dr. VK Saxena, ADG (AP&B), ICAR, Dr. BP Mishra, Director, ICAR-NBAGR, Dr. TK Dutta, Director, ICAR-CIRB, Dr. A Mitra, Director, ICAR-CIRC, Dr. AK Tomar, Director, ICAR-CSWRI, Dr. VK Gupta, Director, ICAR-NRC on Pig and expert scientists of ICAR also attended the meeting. The committee recommended 10 breeds - three each of cattle, goat, and pig and one of buffalo for registration. The Government of India further Gazette notified these breeds.



10th meeting of "The ICAR-Breed Registration Committee" in progress...

Exhibition on farm animal genetic resources

The Bureau showcased the diversity of indigenous AnGR and their importance during exhibition events across the country. These included one at GADVASU, Ludhiana (Punjab) from 23-24 September, 2022 during Pashu Palan Mela and second at 'Cane Festival 2022' at Sugarcane Breeding Centre, Karnal on 12th October, 2022. More than 200 farmers, livestock keepers, entrepreneurs, and various stakeholders, visited the stall at both the events and were sensitized about the importance of indigenous livestock genetic resources.

Celebrations & Meetings

Bureau celebrated its 39th Foundation Day

The ICAR-NBAGR, Karnal celebrated its 39th Foundation Day on 21st September 2022. Commemorating the day a National Symposium on "Contemporary Technology for Animal Genetic Resource (AnGR) Management" was also organized in collaboration with the Society for Conservation of Domestic Animal Biodiversity" (SOCDAB) in hybrid mode. During Foundation day celebration - cum - inaugural function of the National Symposium, Dr. B.N. Tripathi, DDG (AS), ICAR, graced the event as the chief guest. Dr. M.S. Chauhan, Vice Chancellor, GB Pant University of Agriculture & Technology, Pantnagar, the Guest of Honor and Dr. M.L. Madan (Padmashree Awardee), Former DDG (AS), ICAR complimented the Bureau on the occasion of its Foundation Day. Staff members were awarded for their outstanding contribution for the year 2022. The prestigious PG Nair Award for outstanding scientific contribution was bestowed on Dr. Raja KN. Mrs. Anita Chanda, Mrs Parvesh Kumari and Mr Krishan Lal were also awarded for their outstanding work.

SOCDAB National Symposium

The XIX Annual Convention of Society for Conservation of Domestic Animal Biodiversity (SOCDAB) & National Symposium on Contemporary Technology for Animal Genetic Resource (AnGR) Management was organized at NBAGR in the online and offline mode. The 2 day long (21- 22 September 2022) symposium was attended by approximately 300 scientists, researchers, academicians, and students from various institutes. More than 200 papers (oral and poster) were presented in the three scientific sessions. A brain storming session was also conducted on the Breed Watchlist. Dr BP Mishra, Dr Indrajit Ganguly, Dr Rekha Sharma, ICAR-NBAGR was conferred with the prestigious **Fellow of the Society.** National AnGR Quiz competition, held for the first time, was won by the IIVER Rohtak. Dr. Firdous of ICAR-IVRI and Dr. Gayathree of ICAR-NDRI were honored with the Young Scientist Award for their scientific papers. Eighteen research scholars were also awarded for their research papers in oral and poster categories. The need of improvement in the production, management, and conservation of AnGR was the focal point of the recommendations. Dr S.K. Niranjan, Pr Scientist of the Bureau was Organizing Secretary of the symposium.

Inauguration of SOCDAB National Symposium 2022

Lead lecture presentation in a Technical Session

Kisan Divas and Breed Conservation Award Ceremony

The ICAR-NBAGR celebrated "Farmers Day" on 23rd December 2022. Breed Conservation Award-2022 were distributed to the livestock keepers and organizations that have made significant contributions in conserving indigenous animal breeds across the country. The ceremonial function was presided over by Dr BN Tripathi, DDG (Animal Science), ICAR. Dr. AK Srivastava, Vice-Chancellor, Pandit Deendayal Upadhyaya Veterinary University, Mathura, was the chief guest. Dr. Dheer Singh, Director, ICAR-National Dairy Research Institute, Karnal congratulated the awardees. Dr BP Mishra, Director, ICAR-NBAGR welcomed the delegates from across the country. Dr. AK Mishra, Principal Scientist highlighted that this year a record number of applications were received for the Awards across the country, demonstrating the popularity and prestige of the Award.

List of Awardees and breeds conserved

Prize	Awardee	Breed conserved
Individual category		
First	Mr. A. Satish, Madurai(Tamil Nadu)	Chippiparai dog
Second	Mr. Shesh Rao Tukaram Suryavanshi, Latur(Maharashtra)	Deoni cattle
Third	Mr. Srinivasacharya, Mysore (Karnataka)	Mandya sheep
Consolation	Sh. Durga Ram, Bikaner (Rajasthan)	Magra sheep
Institutional category		
First	Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (Punjab)	Nili Ravi buffalo
	ICAR-Indian Grassland and Fodder Research Institute, Jhansi (Uttar Pradesh)	Bhadavari buffalo
Second	ICAR-Central Institute for Research on Goat, Mathura (Uttar Pradesh)	Jamunapari goat
	ICAR-Central Sheep and Wool Research Institute, Avikanagar (Rajasthan)	Malpura sheep
Third	Anand Agriculture University, Anand (Gujarat)	Ankleshwar chicken
	Canine Research and Information Center, Bagalkot (Karnataka)	Mudhol Hound dog
Consolation	Shri Venkateswara Veterinary University, Tirupati (Andhra Pradesh)	Punganur cattle
	Kutch OontUcherakMaldhariSangathan, Kutch, Gujarat	Kharai camel

World Soil Day

The Bureau celebrated "World Soil Day" with more than 100 farmers and livestock keepers from village Gagsina, Karnal as a part of the "Mera Gaon Mera Gaurav" program. Information on approaches to maintain soil health and to increase farm productivity along with the importance of indigenous animals under the changing climate scenario was shared with the farmers.

Independence Day

The Bureau celebrated the 76th Independence Day with the unfurling of the national flag by the Director followed by a cultural program. The staff also participated in the "Har Ghar Tiranga" initiative from 13-15 August, 2022.

IMC Meeting

The 18th meeting of the Institute Management Committee of NBAGR was held on 19th July, 2022 under the chairmanship of the Director, NBAGR. Decisions about administrative and financial matters of the institute were taken during the meeting.

Swachhata Abhiyan: Special Campaign 2.0

ICAR-NBAGR continued with its cleanliness drive during a month-long Special Campaign 2.0 'Swachhata Abhiyaan (2nd October to 31st October, 2022). Director of the Bureau motivated all the staff to participate in cleanliness efforts at office as well as at home, for taking the drive in true spirit. Special drives during the month encompassed cleaning of the roadside footpath at the institute's gate and along the National Highway-44 in front ICAR-NBAGR. Bureau staff visited village Baldi on 14th October, 2022 and transformed Government High School, Baldi village, Karnal into a cleaner premises with the active participation of teachers and students.

Visitors

Distinguished visitors

Sh. Dharmapal, Hon'ble Minister of Livestock & Dairy Development, Govt. of Uttar Pradesh visited ICAR-NBAGR on 7th October, 2022. He appreciated the efforts of the Bureau in documenting and preserving native AnGR of the country. Additional Chief Secretary, Special Secretary, Director, and other officers of the Animal Husbandry Department, Uttar Pradesh also visited the Bureau along with Minister. Similarly, Mr. Sumedh Nagrare, Advisor (Stat), Dept. of Animal Husbandry & Dairying along with his team - Mr. Vishwanath Pratap Singh, Director, Mr. Dipankar Mitra, Asst. Director, Ms. Shraddha Pal, Asst. Director, Mr. Sunil Kumar, Sr. Statistical Officer visited on 22.11.2022.

राजभाषा प्रकोष्ठ की गतिविधियां

संस्थान राजभाषा कार्यान्वयन समिति की बैठक

संस्थान में राजभाषा हिंदी के प्रचार-प्रसार और इस के प्रगामी प्रयोग की प्रगति को बल देने हेतु संस्थान राजभाषा कार्यान्वयन समिति की बैठकें आयोजित की गई। इस वर्ष अक्तुबर से दिसंबर की तिमाही की बैठक 26 जुलाई 2022 और 03 नवम्बर 2022 को समिति कक्ष में आयोजित की गई। बैठक के दौरान संस्थान में राजभाषा हिंदी के प्रगामी प्रयोग की प्रगति की समीक्षा की गई और इसके प्रचार-प्रसार एवं प्रगामी प्रयोग को बल देने हेतु विभिन्न निर्णय लिए गए।

पशुधन प्रकाश पत्रिका के अंक-12 का मूल्यांकन एवं पुरस्कार

संस्थान की वार्षिक हिंदी पत्रिका "पशुधन प्रकाश" के 12वें अंक (वर्ष-2021) का मूल्यांकन उपरांत निम्नानुसार विजेताओं को सम्मानित किया:

1. **प्रथम पुरस्कार**: "पशुधन से प्राप्त दूध: रोगाणु रोधी पेप्टाइड का समृद्ध स्त्रोत" लेखक सोनिका अहलावत, अनिशा कुमारी, रेखा शर्मा, रीना अरोड़ा, अन्नू शर्मा एवं साईं सत्यनारायण, भाकृअनुप-राष्ट्रीय पशु आनुवंशिक संसाधन ब्यूरो, करनाल।
2. **द्वितीय पुरस्कार**: "पशुधन क्षेत्र में आर्थिक और व्यापारिक अवसरों का दोहन" लेखक: राका सक्सेना एवं सोनिया चौहान, भाकृअनुप-राष्ट्रीय कृषि आर्थिकी एवं नीति अनुसंधान संस्थान, नई दिल्ली।
3. **तृतीय पुरस्कार**: "ब्रोकपा और याक: जीवन जीने की एक कला", लेखक: अनीत कौर, जोकेन बाम, मार्टिना पुखम्बम, दिन मणिमेघि, ख्रेन्गुनु ओमेफफुओ, मोख्तार हुसैन, विजय पाल एवं मिहिर सरकार, भाकृअनुप-राष्ट्रीय याक अनुसंधान केंद्र, दिरांग (अ.प्र.)

हिंदी पखवाड़े का आयोजन

प्रत्येक वर्ष की भांति इस वर्ष भी संस्थान में हिंदी पखवाड़ा 1-14 सितंबर तक बड़े उत्साहपूर्वक मनाया गया। इस आयोजन के अंतर्गत संस्थान में विभिन्न हिंदी लेखन की एवं मौखिक प्रतियागितायें करवाई गई। यह पूरा आयोजन निदेशक महोदय द्वारा गठित "हिंदी पखवाड़ा आयोजन समिति" की देख-रेख में करवाया गया जिसके अध्यक्ष डॉ. अनिल कुमार मिश्र, प्रधान वैज्ञानिक एवं हिंदी समन्वयक रहे। संस्थान में आयोजित किये गए दो दिवसीय पालतू पशु जैव विविधता समिति के समापन समारोह में दि: 22 सितंबर 2022 को राजभाषा पुरस्कारों का वितरण किया गया। इस अवसर पर डॉ. वी.के. सक्सेना, सहायक उप-महानिदेशक, मुख्य अतिथि के रूप में उपस्थित रहे।

राष्ट्रीय स्तर की हिंदी कार्यशालाओं में प्रतिभागिता

1. भारतीय कृषि अनुसंधान परिषद् और केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर (पश्चिम बंगाल) में संयुक्त रूप से 24-25 अगस्त 2022 तक आयोजित दो दिवसीय"भाषा उत्सव एवं संगोष्ठी" में भाग लिया।
2. राजभाषा विभाग द्वारा सूरत (गुजरात) में 14-15 सितंबर 2022 तक आयोजित "दो दिवसीय अखिल भारतीय राजभाषा संगोष्ठी एवं हिंदी दिवस समारोह" में डॉ. अनिल कुमार मिश्र, राजभाषा समन्वयक एवं श्री सतपाल, नामित राजभाषा अधिकारी ने भाग लिया।

हिन्दी में उत्कृष्ठ कार्य हेतु संस्थान राजभाषा शील्ड पुरस्कार से सम्मानित

वर्ष 2021-22 के दौरान राजभाषा में उत्कृष्ठ कार्य हेतु राष्ट्रीय पशु आनुवंशिक संसाधन ब्यूरो को नगर राजभाषा कार्यान्वयन समिति (करनाल) द्वारा राजभाषा शील्ड (द्वितीय) पुरस्कार से सम्मानित किया गया। यह पुरस्कार नगर राजभाषा कार्यान्वयन समिति (करनाल) की दिनांक 07 जून 2022 को राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल में सम्पन्न हुई 75वीं बैठक में प्रदान किया गया। संस्थान की तरफ से यह पुरस्कार डॉ. बीपी मिश्रा, निदेशक, डॉ. अनिल कुमार मिश्र प्रधान वैज्ञानिक एवं श्री सतपाल, तकनीकी अधिकारी एवं नामित राजभाषा अधिकारी ने ग्रहण किया।