



# **Proceedings of the XIII National Conference of Indian Society of Animal Genetics and Breeding**

**held on**

**“CHALLENGES IN QUANTITATIVE GENETICS  
FOR IMPROVEMENT OF INDIGENOUS ANIMAL  
GENETIC RESOURCES (ANGR)”**

**held on**

**19 - 20, January–2017**



**ICAR-Indian Veterinary Research Institute (IVRI)**

Izatnagar, Bareilly, Uttar Pradesh  
India



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The inaugural session was chaired by Dr.V.K. Taneja. ISAGB dignitaries - Dr. P. Thangaraju (President, ISAGB) and Dr. R. K. Sethi (General Secretary, ISAGB) also graced the occasion. The ISAGB honoured Dr. R.M.Acharya for his outstanding contribution in the field of Animal Breeding and Genetics. The conference opened with the keynote address from Dr. V. K. Taneja on **“Challenges in Quantitative Genetics and Reproductive Biology for Productivity Enhancement in Bovines: National Perspective and Way Forward”**. Dr Taneja emphasized on dairy breed prioritization of indigenous cattle for genetic improvement and use of assisted reproductive technique and genome wide selection.

A total of seven lead papers were presented in four technical sessions of the conference.

A total of 74 posters were presented in the conference. For each technical session two best posters and one best oral presentation were awarded.

## Technical Session-1

### Challenges in Quantitative Genetics: Resources, Tools and Approaches

This session was chaired by Dr. R.S. Gandhi and Co-Chaired by Drs D.V. Singh and S.K. Singh. Two lead papers were presented during this session. Dr. B.K. Joshi presented a lead paper on “Genetic enhancement of dairy animals – Challenges and Strategies” and discussed various strategies for genetic improvement of Indigenous cattle and buffaloes. He reiterated on infrastructure improvement and on the use of modern breeding interventions for production, multiplication and dissemination of superior germplasm. Dr. R.K. Sethi in his paper on “Cattle and Buffalo genetic resources, productivity and application of genetic models for prediction of breeding values” discussed various methods of analysis of economic traits in dairy animals and stressed on the need for establishing reference population(s). Further, a total of 5 oral presentations were made during the session.

### Recommendations of this session

- Initiate genomic selection in indigenous milch breeds (cattle and



buffalo) on priority along with ARTs for faster multiplication of superior germplasm. Selection of superior breeding bulls on pedigree basis and further multiplication of selected germ plasm.

- Enforce uniform animal identification and performance recording system throughout the country.
- Mandatory registration of young breeding bulls under breeding programmes.
- Strengthening of Animal Breeding Division in various ICAR institutes/ SAUs/SVUs especially in the area of quantitative genetics

## Technical Session-2

### Genomics in Quantitative Genetics

This session was chaired by Dr. Subeer S Majumdar and Co-Chaired by Drs. A. Mitra and P.K. Rout. One lead paper was presented during this session. Dr. B. P. Mishra presented a lead paper on “Genomic Selection of dairy animals- an overview” and discussed about the need of modernization of dairy data recording system and networking. He emphasized the need of having reference population(s) and training of SNPs data for further validation. He also highlighted the need of developing SOPs of phenomics and genomics data recording as major prerequisites for genomic selection. Further, a total of 4 oral presentations were made during the session.

### Recommendations of the session

- In India, phenotyped populations are lacking. Therefore, there is an urgent need to take up effective phenomics recording by developing related infrastructure in the country. Standard operating procedures (SOPs) for detailed phenotypic data recording should be developed.
- Generate genotype/sequencing data and analysis using advanced bioinformatic tools to identify valid association(s) with production traits to be taken up.

## Technical Session-3

### Computational approaches in quantitative genetics

This session was chaired by Dr. K.R. Trivedi and Co-Chaired by Drs. Vineet Bhasin and D.V. Singh. Two lead papers were presented during this session. Dr. G.K. Gaur presented a paper on “SNP data analysis for whole genome selection” and discussed various statistical algorithms for accurate SNPs identification in genomic selection. Dr. D.V. Singh in his paper on “Tenets for the success of progeny testing program under Indian field conditions” discussed the need and requirement of infrastructure for effective implementation of field progeny. The need for real time networking for robust dairy data recording was emphasized. Further, a total of 5 oral presentations were made during the session.

### Recommendations of the session

- Specialized trainings on handling of different softwares exclusively for breeders/statisticians should be arranged for upgradation of knowledge and skills. Centralized facilities for analysis of large data sets be developed across the country in region wise manner.
- Workshops may be organised region wise for the animal breeders/scientists/faculties to discuss and update the new interventions being made in breeding policy.

## Technical Session-4

### Prospective Models for Indigenous AnGR

This session was chaired by Dr. Arjava Sharma and Co-Chaired by Drs. R.N. Chatterjee and B. Prakash. Two lead papers were presented during this session. Dr Suresh. B. Gokhale presented a paper on “Experiences on models for improvement of Indigenous AnGR.” and shared the experiences of various models of data recording that have been adopted at BAIF. He emphasized about need of integration of reproductive assisted techniques



and high throughput SNPs selection in progeny testing programme. Dr. Kamlesh R Trivedi in his paper on “Breeding strategies and programmes for development of indigenous breeds of cattle and buffaloes” stated that - a well-defined breeding goal; suitably designed breed improvement programmes; a user-friendly information system; active participation of farmers and all stakeholders including state government agencies; efforts in developing common grazing lands and improving production environment, and appropriate marketing mechanisms for the success of genetic improvement programmes. Further, a total of 7 oral presentations were made during the session.

### **Recommendations of the session**

- In order to meet the demand of genetically elite male germplasm, more number of breeding bulls of indigenous breeds should be evaluated by involving farmer’s herd. Market demand of a breed should also be looked into at the time of evaluation.
- Conservation policy should be framed and implemented for critically endangered indigenous breeds.

Brainstorming session: Brainstorming session on “Challenges in Animal Breeding Education” was chaired by Dr. R.M. Acharya and Co-Chaired by Drs. Arjava Sharma, M.S. Chauhan, B. Prakash, B.P. Mishra and D.V. Singh. The session opened with a presentation on “Animal Breeding Education- A case study at IVRI and Global Scenario” by Dr. B.P. Mishra. In his presentation Dr. Mishra briefed about the facts and figures of the current education status in Animal Genetics and Breeding in India and other developed countries. He informed the house that after the emergence of molecular tools, the number of research thesis in the area of Molecular Genetics increased rapidly without proper breeding goal(s). Consequently, the expertise in Animal Breeding depleted in the last two decades. This necessitates to make all round efforts for strengthening the PG teaching in Animal Breeding and Genetics for bringing excellence in the field.



## The session was concluded with the remarks

1. Capacity building programmes may be initiated for developing human resource in area of molecular breeding.
2. Projects on animal breeding be taken up by institutes and SVUs and accordingly the available infrastructure be further strengthened.
3. Prioritise and focus on computational genomics/genetics.
4. MoUs need be executed for strengthening animal breeding education in India in a network mode.

The conference concluded with a valedictory session chaired by Dr. T.J. Rasool and co- chaired by Dr. R.K. Singh. The best poster and oral presentations were awarded in this session.

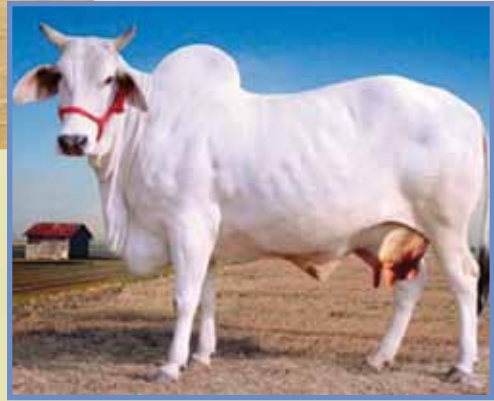
## The major recommendations of the conference:

- Implement uniform animal identification and performance recording system with networking throughout the country (**Action desired from: ICAR & DADF, GoI**)
- Genomic selection in indigenous milch breeds should be initiated on priority. In this regard, work should be undertaken to develop SNP chip specific to indigenous cattle of the country. The available international SNP chip can be tested on our important breeds (Sahiwal, Gir, Kankrej) under the AICRP on Cattle Improvement Programme under ICAR. Similarly, SNP chip for genomic selection in indigenous buffaloes needs to be developed (**Action desired from: ICAR**)
- Evaluating more number of breeding bulls of indigenous breeds by involving farmers herd to meet the demand of genetically elite male germplasm (**Action desired from: ICAR & DADF, GoI**)
- Conservation policy should be framed and implemented for critically endangered indigenous breeds (**Action desired from: DADF, GoI**)

- Human Resource Development by facilitating specialized training(s) on handling of different softwares exclusively for Breeders/statisticians for upgradation of knowledge and skills **(Action desired from: ICAR)**
- Organize region-wise workshops for the animal breeders/scientists/faculties to discuss and update the new interventions being made in breeding policy **(Action desired from: ICAR )**
- As a follow-up action of the Conference, a one day Brainstorming workshop be organized by ISAGB on Genomic selection and its implementation - the way forward
- Focus on Animal Breeding education at Post-graduate level across all SVUs/Deemed Universities **(Action desired from: State Veterinary Universities, ICAR-NDRI & ICAR-IVRI)**







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