

Proceeding
Brain storming meeting for Action plan for AI in goats

A brain storming meeting on 'Action plan for implementation of artificial insemination (AI) in Goats in India' was held on 3rd May 2017 at ICAR-CIRG, Makhdoom under the chairmanship of Prof. (Dr.) M.L. Madan, Ex DDG-AS (ICAR), Ex VC DUVASU, Mathura and Dr PDKV, Akola. Following participants have attended the meeting and participated in discussion.

1. Prof. (Dr.) M.L. Madan, EX DDG (AS), Ex VC DUVASU, Mathura, PDKV, Akola. **Chairman**
2. Dr. K. P. Agrawal, EX National coordinator NATP and NAIP
3. Dr. S.M.K. Naqvi, Director, ICAR-Central Sheep and Wool Research Institute (ICAR-CSWRI), Avikanagar
4. Dr. T. K. Mohanty, Principal Scientist (Animal Reproduction), Artificial Breeding Research Center, ICAR-National Dairy Research Institute, Karnal
5. Dr. P. S. Yadav, Principal Scientist and Head, APR Division, ICAR-CIRB, Hissar
6. Dr. Pradip Ghalsasi, Associate Director Nimbkar Agriculture Research Institute, Phalton
7. Dr. Syed Mohmand Shah, I/c Semen Lab SKUAT, Srinagar J&K
8. Dr. Atul Saxena, Professor and Head, Dept. of Vet. Gynaecology and Obstetrics, DUVASU Mathura
9. Dr. Sarvjeet Yadav, Professor and Head, Dept. of Vet. Physiology, DUVASU, Mathura
10. Dr. S. K. Jindal, Pri. Sci. HOD AP & R Division, ICAR-CIRG
11. Dr. S. V. Singh, Head, Animal Health Division, ICAR-CIRG
12. Dr. Satish Kumar, Pri. Sci., AP & R Division, ICAR-CIRG
13. Dr. U. B. Chaudhary, Pri. Sci. and Head, Animal Nutrition and Product Technology Division, ICAR-CIRG
14. Dr. Saket Bhushan, Pri. Sci. and Head, Animal Genetics and Breeding Division, ICAR-CIRG
15. Dr. Braj Mohan, Pri. Sci. and I/c EE&SC Section, ICAR-CIRG
16. Dr. B. Rai, PS, AP & R Division, ICAR-CIRG
17. Dr. A. K. Goel, Pri. Sci., AP & R Division, ICAR-CIRG
18. Dr. S. D. Kharche, Pri. Sci., AP & R Division, ICAR-CIRG
19. Dr. N. Ramachandran, Sr scientist, AP & R Division, ICAR-CIRG
20. Dr. Ravi Ranjan, Scientist, AP & R Division, ICAR-CIRG
21. Dr. S. P. Singh, Scientist, AP & R Division, ICAR-CIRG
22. Dr. M. K. Singh, Pri. Sci. and I/C Barbari unit CIRG
23. Dr. V. Rajkumar, Sr Scientist, LPT and scientific advisor to Director, ICAR-CIRG
24. Dr. Ashok Kumar, I/ C PME, ICAR-CIRG

Director of Institute, Dr. M. S. Chauhan, welcomed the Chairman, Prof. (Dr.) M. L. Madan and invited scientists and participants. He presented an overview on the Goat production in the country and briefly introduced the work carried out by CIRG over past years. Dr. K P Agrawal, in his address emphasized the importance and what the future plan for research in AI in Goat should be. Chairman of the meeting Prof. (Dr.) M. L. Madan, in

his address stated the importance of traditional and new generation research technologies in the area of semen processing , freezing , storage and its use in Goats through different AI techniques.

Prof. Madan emphasised that we should revisit and thoroughly review the past work and accordingly address our research and development needs so as to take this technology to its end users to bring profitability to the animal owners. While appreciating the research effort of the scientific community in building a data base, but, a closer look of the information shows that it is disjointed and has not been taken to a successful delivery. This required now a different approach to consolidate the fragmented information on semen processing and AI, develop a standard protocol, identify the current pitfalls, and present solutions to each of these issues. He strongly emphasized that adoption of AI in small ruminants in both extensive and intensive systems is the only assured and fast method for animal improvement and reach the farmer's at their door. Thereafter, he invited the scientists to make their presentations, requesting them to be focussed to take the technology to field for animal improvement using AI to deliver the best Quality germplasm to the vast population of goats.

The presentations were made by Dr. S. K. Jindal (Pri. Sci. and Head, Physiology and Reproduction Division), Dr. Ravi Ranjan (Scientist Physiology and Reproduction Division), Dr. S.M.K. Naqvi (Director, ICAR-CSWRI), Dr. Pradeep Ghalsasi (Associated Director, NARI, Phaltan), Dr. T. K. Mohanti (PS, Artificial Breeding Research Center, ICAR-NDRI, Karnal), Dr. P. S. Yadav (PS, Animal Physiology, ICAR-CIRB, Hisar), Dr. Syed Mohmad Shah (I/c Semen Lab, SKUAST J&K) and Dr. Sarvjeet Yadav (Professor and Head, Department of Physiology, DUVASU, Mathura).

The following important points emerged out of discussion:

1. Information about small ruminant resource of the country and current status of AI in goats (both, globally and in the country) should be available on the website of CIRG.
2. The information should be dynamic and should be updated at regular interval.
3. CIRG should develop a model protocol for semen freezing and have a laid out regular procedure for routine use of AI technology for demonstration and use in goats.
4. Only well evaluated semen samples need to be stored in the lab/semen bank of the Institute for research purpose and AI with clear marking about buck number and his fertility parameters.
5. The buck selection process should include the parameters of buck fertility, semen bacteriological quality, milk production, kid BW at birth, neonate health and rate of weight gain over first 3 months among kids.
6. Effect of certain non-conventional additives such as bioactive peptides and dried defatted goat milk on post-thaw motility and other seminal parameters before and after freezing should be evaluated and compared with the traditional diluter with egg yolk.
7. For better results in field condition, intra-vaginal sponge technology should be adopted for estrus synchronization to conduct timed-AI in goats.
8. Management conditions including feeding and operative environment (thermal and social environment) nearby the animal and area where semen collection and AI activity is done, are important factors for better AI results and suitable recommendations developed

9. Breed difference in semen components with respect to biochemical, enzymatic and other parameters need to be estimated to evaluate cryopreservation differences among breeds/ activity of semen of different goat breeds.
10. Even though the tropical goats are continuous breeder, effect of season on seminal parameters of Indian goat breeds need to be estimated so that appropriate season/time for semen collection and preservation may be identified and evolved.
11. Bucks used for semen collection need to be managed in pen system along with appropriate floor space and should not be used for natural mating to optimize the semen yield.
12. Bio safety aspect of semen processing and AI technology being very critical, biological quality of semen may cause great variability in outcome of AI.
13. Cost involved for production of semen dose, storage and AI costs should be calculated thoroughly and a minimum cost for a single dose of semen should be determined for use/sale purpose.
14. Production technology under Intensive rearing of goats is distinctly different than small holder or nomadic rearing. As different technique and technologies are required, such practices need to be developed, evaluated and recommendations regarding total management made available to intensive goat producers’
15. The economics of goat production/rearing under small , medium and large production systems need to be worked out as an advisory to goat keepers to make economic choices for profitability. Eco regional and socioeconomic considerations should form a part of goat management strategies and profitability.
16. There is need to present goat farmers with the benefits and economics of Pricing and Value addition in goat rearing and introduce them to the basic concepts of market valuation and sale. Value addition models need to be developed as modules with an estimation of possible profit abilities.

Post discussion, the Chairman identified an urgent need to develop a Working Paper of standard practices, as output from the Brainstorming. This document should be a “State Of Knowledge “ paper with regards to Goat semen-production, availability, Cryopreservation technique, AI procedures, health management, economics, product value addition/production and marketing. Based on the current status, MODEL PROTOCOLS may be developed for goat AI procedures for use of different central and state agencies to have scientific validity and uniformity for National development plan.

This document may be developed in a time bound manner within **three weeks** as outlined in the action plan detailed below;

Recommendations for action plan for AI in goats:

Sl. No	Activity / action plan	Experts involved	Time frame for submission / Duration/ Remark
1.	<p>Preparation of standard protocol for AI in goats that will include all aspects of semen collection, freezing and AI as per the current knowledge available , and as practiced by different agencies, Cryoprotectants and freezing efficacy.</p> <p>Insemination techniques and procedures.</p> <p>Cost of insemination</p>	<p>Dr. A. K. Goel, Dr. S. D. Kharche, Dr. Ravi Ranjan</p>	<p>within 15 days</p>
2.	<p>Preparation of document for biosafety measures during semen collection and AI in goats. Certification and quality assurance of semen labs</p>	<p>Dr. T. K. Mohanty Dr. Sarvjeet Yadav</p>	<p>within 15 days</p>
3.	<p>Document on germplasm requirements among Goats, justifying ‘Need of AI in small ruminants’</p>	<p>Dr. S.M.K. Naqvi</p>	<p>within 15 days</p>
4.	<p>Goat Resource base, including information on:</p> <p>Institutions,(central, state, private, NGO’s), prof/trained manpower connected and available</p> <p>Farm families with goats, landless with goats, holding size and herd size (animal numbers)</p> <p>Goat breeds, Population, demographic distribution. socioeconomics</p> <p>Feed resource</p> <p>Land resource and carrying capacity.</p> <p>Agencies dealing with semen and Semen</p>	<p>Dr. M. K. Singh Dr. Ravi Ranjan Dr. S. P. Singh</p>	<p>within 10 days</p>

	resource		
5.	Buck selection. Breeding policy in respect to AI program in goats ,	Dr. M. K. Singh	within 10 days
6.	Monitoring system for AI program in goats(central ,state) including private players and NGOs involved in small ruminant AI	Dr. Atul Saxena Dr. Pradip Ghalsasi Dr. Ravi Ranjan	within 15 days
7.	Researchable issues in the area of goat genetics and cryopreservation and AI in goats	Dr. P K. Rout Dr. T. K. Mohanty	within 15 days
8.	Cost economics of goat production. Value addition and marketing of goat and goat products	Dr A K Dixit	
9	Health issues. Cost for health protection	Dr Ashok Kumar Dr K Gururaj	
10	Techniques, technologies and recommendations for INTENSIVE goat production	Dr Ramachandran N Dr M Dighe	

All concerned group will submit the document to Director CIRG for compilation that will also monitor the progress. The Director may also co-opt other scientists/experts to devolve on the issues outlined (1-16). (First draft should be prepared in 4 week period and immediately circulated/uploaded on the Institute's website for the comments by the experts within a week's duration. Thereafter, the draft may be finalized accordingly).

This manuscript may kindly be forwarded to PME cell ([pmecirg @ gmail.com](mailto:pmecirg@gmail.com), akumar63@gmail.com)
(Ashok Kumar)

PME cell CIRG makhdoom

Proceeding edited and approved by Chairman , BS meeting

Circulated to all participants for action accordingly ; Chairman , BS meeting and Dr BS Prakash ADG ICAR for information

