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OPERATIONAL GUIDELINES FOR IMPLEMENTATION OF REVISED RASHTRIYA GOKUL MISSION

MINISTRY OF FISHERIES ANIMAL HUSBANDRY & DAIRYING
DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING
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OPERATIONAL GUIDELINES FOR IMPLEMENTATION OF REVISED RASHTRIYA GOKUL MISSION (2021-2026)

SALIENT FEATURES

1. Introduction

1.1 The Rashtriya Gokul Mission (RGM) is being implemented since December 2014 for development and conservation of indigenous bovine breeds, genetic upgradation of bovine population, and enhancement of milk productivity and production. Scheme is crucial for upliftment of rural poor as more than 80% low producing indigenous animals are with small and marginal farmers and landless labourers. The scheme is important in enhancing milk production and productivity of bovines to meet growing demand of milk and making dairying more remunerative to the rural farmers of the country. The scheme is leading to multiplication of elite animals of indigenous breeds and increased availability of indigenous stock. The Rashtriya Gokul Mission was restructured/ realigned in July 2021 under Development Programmes with the approval of Cabinet Committee on Economic Affairs (CCEA) for implementation from 2021-22 to 2025-26 with allocated sum of ₹2400 crores.

1.2 The Cabinet has approved the revised Rashtriya Gokul Mission in March 2025 with an additional outlay of ₹1000 crores that is total outlay of ₹3400 crores during 15th Finance Commission cycle that is from 2021-22 to 2025-26.

1.3 The revised RGM will result in enhanced productivity and benefit of the programme, percolating to all cattle and buffaloes of India especially with small and marginal farmers. This programme will also benefit women in particular since over 70% of the work involved in livestock farming is undertaken by women.

2. Objectives

a) Targeted raising productivity of indigenous bovine breeds through identification and propagation of elite animals of indigenous breeds under National Milk Recording Programme.
b) To create National Milch Herd of high genetic merit animals which consists of donors and propagation of elitist of elite animals through use modern reproductive bio techniques.
c) Mainstreaming use of modern breeding technologies such as sex sorted semen, IVF technology, genomics etc. for enhancing productivity of bovines at farmer’s level.
d) To enhance Artificial insemination coverage through delivery of Artificial insemination services at farmers’ doorstep.

3. Funding Pattern

All the components of Scheme will be implemented on 100% grant-in-aid basis except the components of:

i) promoting sex sorted semen under the component assistance upto 50% of the cost of sex sorted semen will be made available to participating farmers;

ii) 3% interest subvention on loan taken by the farmer from milk unions/ financial institutions/ banks for induction of high genetic merit (HGM) IVF born Heifers and

iii) One-time assistance of 35% of the capital cost for establishment of housing facility and induction of heifers in Heifer Rearing centers to implementing agencies.

3. Duration of the Project:

3.1 Revised Rashtriya Gokul Mission will be implemented throughout the country from 2021-2022 to 2025-26 on the funding pattern as stated above.

4. Scope and Area of Operation:

4.1 **Area:** Revised Rashtriya Gokul Mission will be implemented throughout the country.

4.2 **Scope:** All Components related to genetic upgradation of bovine population as mentioned in the guidelines will be eligible for funding under RGM.

5. Implementing Agencies*:*

5.1 Implementing Agencies (IAs) -	State Livestock Development Boards# / State Milk Federations/ Milk Unions / Central Frozen Semen Production and Training Institute, Central Cattle Breeding Farms, Central Herd Registration Scheme, National Dairy Development Board (NDDB) / Indian Council of Agricultural Research ICAR and its Institutes
5.2 Participating Agencies (PAs)-	Other agencies having a role in Bovine Development like, Universities, Colleges, etc PAs will submit Projects to the concerned IA.

State Government may decide on State implementing agency and participating agencies of the scheme.

6. Institutional Set-up for Implementation- Fund Flow Mechanism

6.1 Revised Rashtriya Gokul Mission (RGM) will be implemented as a Central Sector Scheme. The State Livestock Development Boards and National Dairy Development Board have been designated as the Central Nodal Agency (CNA) to implement the scheme.

6.2 All the designated CNAs have already opened account with the Reserve Bank of India (RBI) in e-Kuber for funds to be provided under Rashtriya Gokul Mission.

6.3 If besides CNA, there are 2nd level State Government agencies involved in implementation of the scheme (Districts/ Milk Federations/ Milk Unions/ ICAR Institutes), these Implementing Agencies (IAs) will be known as Sub-Agencies (SAs) of the CNA.

6.4 Most of the SAs have opened bank accounts with RBI in e- Kuber and same have been mapped in TSA module of PFMS. CNA may submit proposal to DAHD for opening of bank account of remaining SAs.

6.5 The CNA and SAs shall not open/operate/ park scheme funds in any other bank account.

6.6 All accounts of CNA/Government SAs in RBI are “Assignment Accounts”. A limit up to which expenditure can be incurred by the CNA/ SAs shall be assigned to these accounts from time to time by the Pay and Accounts Office (PAO) through PFMS.

6.7 Assignment is based on sanction issued by the Cattle Division (PD) of DAHD and the bill preferred by the Drawing and Disbursing Officer (DDO).

6.8 The CNA may issue e-Sub- assignments in PFMS against this assignment setting limits of expenditure for the SAs.

6.9 With Accounts Officers (PAOs) shall, through assignments, advise RBI, after exercising all necessary checks, to honor the payment instructions issued by the concerned CNA/SA up to the, “assigned limit” in the advice.

6.10 The PAO shall debit the concerned Head of Account for appropriation but not transfer the cash directly to the CNA. It shall be retained in an interim account in respect of the CNA listed under the parent Ministry/ Department in the public account.

6.11 Unutilized assignments will lapse to the Government at the close of the Financial Year as per the extant norms of Budget execution and will not be available to the CNAs /SAs for expenditure in the next financial year. In PFMS too, all e-assignments/e-sub assignments shall

cease to exist after the close of financial years and shall be flushed out from the system as per the current practice in TSA module.

6.12 In respect of some transactions like payment of TDS, Income Tax and GST, Opening of Letter of Credit in favor of foreign suppliers and payment of salaries of the month of March to be paid in 1st week of April, CNAs/SAs may utilize the services of their existing account at commercial banks. They may transfer funds “just in time” to the extent required for meeting such transactions. However, in no case the money transferred under this provision will be parked in a Commercial Bank beyond a period of two weeks except in case of opening Letter of Credit in favor of foreign suppliers in which case the funds can be held in the bank account for the duration required as per purchase order/contract agreement.

6.13 Unutilized amount of past releases under the scheme available in the bank account of CNA & SAs shall be deposited in the Consolidated Fund of India.

7. Supplementation of Fund-Flow from Sources other than RGM

7.1 The IAs may augment fund flow from their own resources towards recurring and maintenance costs.

7.2 It is also expected that every effort at convergence would be made in the project formulation by the States utilizing sources such as RKVY and multidisciplinary schemes of Ministry of Rural Development, Department of Agriculture & Farmers Welfare, Department of Biotechnology etc.

8. Central Level Implementation Mechanism

8.1 There will be a National Steering Committee (NSC) / Project Steering Committee constituted by drawing experts from related field which will be chaired by the Secretary AHD. NSC will be responsible for approval of projects for funding under revised RGM scheme received from IAs. Projects will be appraised by DAHD officials before placing to the NSC for approval. Composition of the Committee is as under:

1	Secretary, DAHD, Government of India	Chairperson
2	AS& FA, DAHD, Govt. of India	Member
3	Animal Husbandry Commissioner	Member
4	Additional Secretary, CDD, DAHD	Member
5	DDG ICAR (AS) or his representative	Member
6	Executive Director, NDDB	Member
7	Joint Commissioner (Cattle)	Member Secretary

8.2 NSC will be empowered to lay down and amend operational guidelines, other than those affecting financing pattern, approve Annual Action Plans and sanction release of funds to the IAs.

8.3 The NSC would have powers to modify physical and financial targets based on review, approve inclusion and changes in eligibility criteria for implementing agencies and other guidelines including project area, composition of NSC, component structure, cost of components. NSC will be fully empowered to make changes and delegate powers necessary for smooth implementation of the programme but within the overall ambit of EFC recommendations and Cabinet approval.

8.4 Central Monitoring Units (CMU) of experts already constituted by the Department for development of Minimum of Standard Protocols (MSP) and Standard Operating Procedures and implementation of the MSP and SOPs in the country will continue its activities during revised RGM 2021-26. Evaluation of accreditation of breeding institutes such as semen stations, AI training Institutes, Bull Mother Farms, IVF labs will be undertaken by CMU in order to improve quality of breeding inputs available in the country.

8.5 **Measures to Ensure Quality of Goods and Services:** Standards and specifications in the form of MSPs/SOPs formulated by CMU shall be implemented in letter and spirit by IAs. Standards formulated by BIS for cryocontainers, castrators, AI consumables; equipments etc shall also be followed by IAs.

8.6 **Project Management Agency (PMA):** For implementation and monitoring of scheme, a Project Management Agency (PMA) will be established. PMA will assist in implementation and monitor the project throughout the country. At the head quarter PMA will provide core staff for drawing state specific proposals and appraisal of subprojects received from the IAs. Management Information System (MIS) will be developed by PMA to obtain online progress reports from IAs of the scheme.

9. State Level Implementation Mechanism

9.1 State/UT Level RGM Review Committee meeting shall be held quarterly under the Chairmanship of Principal Secretary of the State to review progress of physical financial and technical parameters. CEOs of LDB, Director (Animal Husbandry), representative of 1 semen station and breeding experts of State Veterinary University will be its members. Additional Secretary, DAHD or his repetitive should attend the meeting once every six month.

9.2 Annual Workshop of all stake holders will be organised by the participating State to review and monitor implementation of the scheme.

9.3 All State Implementation Agencies (IAs) will follow the State Procurement/purchase Procedures and Guidelines.

9.4 Audited Annual Progress Report in the prescribed format will be published by the IAs within the prescribed time frame and circulated to all concerned.

10. Experience sharing and supervision

10.1 Experiences of implementing agencies and other stake-holders will be shared during the annual workshop organised by DAHD.

10.2 Implementing agencies will be allowed to share standards and specifications of goods and services undertaken during implementation of the scheme programme in order to improve quality of goods and services and for expeditious implementation of the programme

10.2 Stake holders having experiences in implementation of breeding programme will also be engaged in supervision of bull production programme in order to improve genetic makeup of the germplasm used under the programme and to enhance genetic gain among bovine population.

10. State Ranking

10.1 To enhance the competitive spirit of good performance among the States and Union Territories, it is proposed to conduct an annual State wise ranking exercise in implementation of revised Rashtriya Gokul Mission based on the following parameters: (i) Increase in AI coverage from existing AI coverage; (ii) % of targets achieved under implementation of Nationwide AI programme; (iii) % of targets achieved in establishment of Community resource person/ MAITRIs; (iv) completion of projects sanctioned under the scheme and (v) feedback from farmers/ beneficiaries of NAIP/ sex sorted semen/IVF technology. PMA will assist in development of further details for State wise ranking in implementation of Rashtriya Gokul Mission.

11. Social capital usage for implementation, extension and Monitoring

11.1 Panchayti Raj Institutions (PRIs) will be integrated for monitoring of the scheme at the village level specially NAIP, Sex Sorted semen, IVF technology, Community resource person/ MAITRIs etc. List of farmers availed services under the scheme will also be made available to PRIs by concerned State. Help of PRIs will also be taken in identification of educated rural youth to be trained and equipped as community resource person/MAITRIs.

11.2 Krishi Vigyan Kendra will be used as farmer's training school and demonstration centre.

11.3 The Government approved social media platforms will be used for overall publicity and dissemination of Departmental activities.

12. Components

The details of components of revised RGM along with their pattern of assistance are as under:

12.1 Availability of High genetic Merit Germplasm:

12.1.1 Support to semen stations

12.1.1.1 Strengthening of existing semen stations:

Support under the component will be limited to semen stations under the control of State Governments, Livestock Development Boards, Dairy Cooperatives/ Milk Federations and NDDB. Under the component funds will be made available for strengthening infrastructure such as construction of bull sheds/bull pen, semen collection arena, semen processing laboratory, strengthening of bio-security etc and for equipments and other related items. It will be mandatory for all semen stations to use Bharat Pashudhan. NDDB will assist semen stations in preparation of the project on the basis of infrastructure available and semen doses required for implementation of RGM. Detailed guidelines are given at **Annexure-I.** All the semen stations in the country will be evaluated and accredited by Central Monitoring Unit. All the semen stations will follow MSP for semen production and guidelines issued by Government of India from time to time. Non accredited semen stations will not be allowed to sell semen doses for use in breeding programme in the country.

12.1.2 Bull Production Programme

12.1.2.1 Progeny Testing:

Milk production is a sex limited trait therefore genetic potential of the bull is estimated on the basis of performance of the daughters. The scientific breeding method for estimating predicted transmitting ability of bulls on daughters' performance is termed as progeny testing. Under the component organized progeny testing programme will be assisted for production of progeny tested bulls. Implementation of Progeny testing programme will be coordinated through NDDB and bulls produced under the programme will be distributed through bull distribution committee constituted by DAHD. Projects will be implemented through Minimum Standard Protocol and SOPs prescribed by DAHD. Detailed Guidelines are given **Annexure-II.**

12.1.2.2 Pedigree selection:

Under the programme, high genetic merit bulls are selected on the basis of pedigree details and performance of dam, sire and other ancestors in the pedigree. The pedigree selection programme will be continued under Rashtriya Gokul Mission for production of high genetic merit bulls in order to meet requirement of bulls of different breeds at semen stations. The Central herd Registration Scheme of DAHD will be deployed for monitoring and implementation of pedigree selection programme. Detailed guidelines given at **Annexure-III**.

12.1.2.3 Genomic Selection:

Gau Chip for cattle and Mahish Chip for buffalo developed under RGM after combining efforts made by agencies such as National Bureau of Animal Genetic Resources (NBAGR), National Dairy Development Board (NDDB), and National Institute of Animal Biotechnology (NIAB) will be used for initial selection of bulls to be put under PT programme and selection of high genetic bulls on the basis genomics and pedigree information. For validation of genomic chip NDDB, NBAGR and other institutes will be assisted. It will be mandatory for all the semen stations to take up genomic testing of all the bulls available to semen station and bull mother farms will be assisted for estimating genomic breeding value of females available at the farm.

12.1.2.4 Production of bulls through embryos:

Under the component High Genetic Merit (HGM) bulls of other indigenous breeds will be produced which are not covered under PT/ PS programme. These bulls will be inducted at semen stations to produce quality semen doses for implementation genetic upgradation programme covering all 53 breeds of cattle and 20 breeds of buffaloes. The cost of the component includes identification and procurement of oocytes of elite donors, production of IVF embryos, embryo transfer, and rearing of male calves in disease free conditions.

12.1.2.5 Import of bulls or equivalent number of embryos:

Import of germplasm of indigenous and exotic breeds of very high genetic merit will be taken up to make replacement of low genetic merit bulls available at semen stations. During initial years import of the germplasm in the form of bulls will be taken up and imported bulls will be made available to semen stations under the control of GoI, State Government, NDDB and Dairy Cooperatives. It is proposed to import unsexed embryos with high standards and specifications of indigenous /exotic breeds to meet long term requirement of bulls. Imported embryos would be made available to identified IVF centers for production of bulls (male calves). Male calves born through imported embryos will made available to semen stations as mentioned above and female calves born under the programme will be made available to IVF centres for use as donor mothers. High genetic merit semen of breeds of Indian origin and

exotic breeds will be imported to meet requirement of bulls and to create pool of high genetic merit bull mothers for use in IVF programmes. Germplasm in all the form semen, embryos and bull will be imported through NDDB/ SLDB/ Milk Federations.

12.1.2.6 National Milk Recording Programme (NMRP):

National Milk Programme will be implemented in lines of pedigree selection programme. The object of the programme is to identify elite animals. NDDB has been assigned the role of Implementing Agency (IA) for this project. NDDB will implement the project with the help of Participating Agencies (PA), like Milk Unions, State AHDs, State LDBs, Vet. Colleges, ICAR institutions, etc. that has its own AI / Milk recording network or is willing to establish recording network in the selected area. Participating Agencies (PA) and Project Area would be identified by NDDB based on Cattle and Buffalo breeds available in the area, milch animal population and existing network of an agency. NDDB will train the field personnel, release funds and monitor the project activities in the field. NMRP would be implemented across the country in modular form. 45 milk recording units (other than those of PT/PS projects) would be identified wherein milk recording could be conducted by identified PAs. Detailed guidelines are at **Annexure-IV.**

12.2 Support to filed AI network

12.2.1 Induction of Community resource person /Multi-Purpose AI technicians in Rural India (MAITRIs):

Against the requirement of 2,02,469 AI technicians 1,45,586 AI technicians are available in the country. Thus additional 50,000 AI technicians will be required for extension of AI coverage from 30% to 70%. Under the scheme it is proposed to establish 14,600 MAITRI centers in 2025-26. Funds under the component would be made available for: i) procurement of equipment and ii) training of community resource person/ MAITRIs. Detailed Guidelines are given at **Annexure- V.**

12.2.2 Strengthening of existing AI centers:

Activity is to strengthen AI centers in the country for replacing unserviceable cryo-containers and AI kits. It is proposed to strengthen Govt. AI centers by replacing AI kits; cryo-containers and other latest equipment.

12.3 Extension of AI coverage

12.3.1 Artificial Insemination Programme/ Nationwide AI programme (NAIP):

Under the component it is proposed to cover 20 million animals annually through artificial

insemination. This will lead to increase AI coverage from present level of 36% to 70% of the breedable bovine females. Besides, it is mandatory that all animals covered under the programme will be identified using Pashu Aadhaar. Quality AI services will be delivered by Community resource person/ MAITRIs/ Government AI technicians/ private/ NGO at farmers' doorstep. In the proposed programme only use of high genetic merit bull semen will be permitted. Under the programme AI services will be delivered at farmers' doorstep free of cost. Incentive will also be made available to Community resource person/ MAITRIs / private AI technicians for performing AI using HGM bull semen and after that incentive will be made available on calf born basis. Provision of procurement of semen doses and awareness programme is also available under the project. Incentive for tagging of the animals will be available to AI technicians from National Animal Disease Control Programme (NADCP) scheme. Detailed Guidelines are at **Annexure- VI.**

12.3.2 Promotion of sex sorted semen/ Accelerated breed improvement programme using sex sorted semen:

With mechanization of Agriculture, utility of male bovines have been reduced. Farmers are not willing to maintain Bullocks for agriculture or any other draft work. Hence, male calves born at farmer house have become a liability. Farmers often let the male calves loose which are resulting into increase in stray animal population. Only female calves can be produced (with more than 90% accuracy) by use of latest technology like Sex Sorted Semen in AI program. Extensive use would also increase the number of female animals thereby increasing income of farmers through sale of female or by sale of milk.

All the animals covered under the programmes will be registered and their data uploaded on Bharat Pashudhan/ NDLM data base. Female calves born under the programme will also be registered using Pashu Aadhar and their data uploaded on Bharat pashudhan data base. Sex sorted semen will be used in normal cyclic animals in 1st to 3rd lactation

Concerned Milk Union/ State Animal Husbandry Department will be requested to take responsibility to provide veterinary aid to the calves born under the programme. **Detailed guidelines are at Annexure-VII**

12.4 Skill Development:

Assistance will be made available for training of professionals in IVF technology, other advanced breeding technologies and training of AI technicians/ professionals in latest development in frozen semen technology. The IVF training will be conducted at the training institutes recognized by the DAHD for this purpose.

12.5 Implementation of National Digital Livestock Mission – Bharat Pashudhan

Bharat Pashudhan system has been established as a national data base for maintaining data of animal identification & traceability, animal breeding, vaccination, livestock health (e-prescription), disease surveillance and monitoring. This is complete ecosystem for animal husbandry sector.

Farmers can also see the data through 1962 app (farmers app) and avail services as per their requirements. Funds under the component are assessed for managing Bharat Pashudhan system including cloud service and pilot projects.

12.6 Farmers Awareness:

12.6.1 For creation of awareness among the farmers, funds will be made available under the scheme for organising farmers training programme, award to farmers, best AI technicians, dairy cooperatives, fertility camps, publication of leaflets and pamphlets, milk yield competitions, calf rallies, etc. All other extension activities required for effective implementation of the project will be supported under the component.

12.7 Establishment of Heifer rearing Centers

12.7.1 Heifer rearing centres will be established through the Milk Unions / State Livestock Development Boards/ State Animal Husbandry Departments/ NDDB. The centres will procure good quality disease free heifers from the milk pockets or breeding tracts. Heifers inducted at Heifer Rearing Centre (HRCs) will be reared by the centre till maturity and impregnated using In-Vitro fertilization (IVF) technology. Thus, the purpose of promoting IVF under RGM, viz., quick genetic upgradation of the entire bovine population, would be well served if such farms are set up.

12.7.2 Under the component one-time assistance of 35% of the capital cost for establishment of housing facility and induction of heifers in Heifer Rearing Centres to Implementing Agencies, Detailed Guidelines are at **Annexure-VIII.**

12.8 Interest Subvention to farmers on loan for purchase of High Genetic Merit (HGM) heifers

12.8.1 To encourage farmers to purchase High genetic merit (HGM) IVF heifers, either from the Heifer Rearing Centres, or from the Breed Multiplication Farms already set up under RGM, it is proposed to provide 3% interest subvention on loan taken by the farmer from milk unions / financial institutions/ banks for such purchase. Detailed Guidelines are at **Annexure-IX.**

12.9 Other Activities

12.9.1 Any other activity related to cattle and buffalo development i.e. Strengthening of bull mother farms, Strengthening of LN transport- distribution system, establishment of centre of excellence, strengthening of Central Cattle Breeding Farms and committed liabilities. It is proposed to give budgetary support to NDDB for operation and management of Central Cattle Breeding Farms as approved by EFC.

12.9.2 Any other activity considered to be important to taken up under the project will be allowed including creation of new infrastructure for bovine breeding.

13 Project Preparation and Submission of Proposal

13.1 The IA's will formulate a single comprehensive proposal and avoid duplication/ overlap of activities. State Implementing Agency will submit proposal to DAHD through State Government.

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Annexure-I

SUPPORT TO SEMEN PRODUCTION- STRENGTHENING OF EXISTING SEMEN STATIONS

1. Rationale

1.1 In order to extend AI coverage from existing 30% of the breedable bovine females to 70% of the breedable bovine females, semen production is to be increased from 119 million doses to 200 million doses. Therefore there is a need to strengthen existing semen station to meet demand of semen doses in the country. Semen stations which are not covered under NDP-I will also be covered under the component. Also there is always a need to keep semen stations up to the international standards so that our farmers receive quality Frozen Semen doses for AI delivery system. Semen stations continuously need to improve themselves to meet the improving standards of semen production and biosecurity.

1.2 Semen Stations which were not covered under NDP-I scheme and semen stations which were covered under NDP-I scheme but have completed five years of strengthening can submit proposal for strengthening of Semen Station under Rashtriya Gokul Mission scheme.

1.3 NDDB will assist semen stations in formulation of project document after detailed analysis of the infrastructure available and further strengthening required to meet requirement of semen doses under RGM.

2. Components Covered:

2.1 Induction of HGM Bulls: The bulls required shall be sourced from ongoing Progeny Testing (PT), Pedigree Selection (PS), IVF technology, genomic selection, bulls born out of imported embryos/ semen and bulls imported for semen production. All bulls available at the semen stations would be genomically tested using genomic chip.

2.2 Civil Works: Semen stations shall build structures that blend well with the semen production operations and are cost effective. Semen station shall give details of bull shed/ bull pen required for housing additional bulls and capacity of quarantine shed required for quarantining of bulls to be inducted at the semen station. In addition to the above, few structures such as bio-gas plant, incinerator and protection walls may also be proposed by the semen station as a part of strengthening.

2.3. Laboratory Equipment: Semen stations may propose funds to upgrade existing laboratories with modern amenities and latest equipment in semen production and processing. The lab equipments will not only enhance the efficiency of the laboratory, but also ensure the quality of the product produced. Semen stations shall give details of the lab equipments required in the project document and indicate number of doses produced after strengthening.

2.4 Farm Machinery and Equipment: Semen stations may propose funds to strengthen existing fodder farm operations and procure new farm machinery to increase the effectiveness and efficiency of fodder farm operations.

2.5 ICT for Semen Station For installation of SSMS/INSPRM system developed by NDDB year wise ICT related infrastructure required and its costs

2.6 Training and Capacity building Semen stations may propose funds for training and retraining of existing manpower and for newly inducted manpower. Total cost of training and retraining of manpower may be given in the project document.

3 Preparation of the project

3.1 Expert team from NDDB will assist semen station in formulation of project proposal after detailed analysis of the infrastructure available and further strengthening required for meeting requirement of semen doses under RGM.

4. Project Management Committee

4.1 The project will be managed, monitored and reviewed by a Management Committee to be constituted by Semen Station.

4.2 The Committee, if it desires, would also call special invitees to attend the meeting. The general superintendence, direction, control and management of the affairs and activities of the project will vest in the Management Committee. The Management Committee will ensure the effective implementation of the project and that the objectives herein mentioned are achieved.

5. Implementing Agency:

5.1 Semen stations under the control of SLDB, Milk Federation (Dairy Cooperatives) and NDDB will be assisted under the project. SLDBs, Milk Federation, NDDB will be Implementing Agency for Implementation of the project.

6. Fund Flow Mechanism:

Funds will be released directly to implementing agencies under RGM for implementation of the project.

Annexure-II

IMPLEMENTATION OF PROGENY TESTING PROGRAMME

1. Introduction

1.1 One of the key factors affecting productivity is the genetic ability of an animal for milk production, which is an inherited character, while others provide an enabling environment. The breeding bull contributes significantly in enhancing the genetic potential of its progenies for economically important traits like milk production, fat, SNF, protein, fertility, body conformation etc. Therefore, building an infrastructure for evaluation and production of breeding bulls with high genetic potential for milk production and other important traits and an infrastructure to transmit their genetic potential to maximum number of progenies is very important in any animal breeding programme. Progeny Testing is a method for accurately evaluating and selecting top bulls and using them to produce future bulls. This document describes the Standard Operating Procedures (SOP) and minimum standards for implementing a progeny testing programme both for cattle and buffaloes in the field for evaluation and selection of high quality bulls and for production of young bulls by inseminating best performing elite females using semen of top ranked progeny tested bulls.

2. Objectives of the Programme The main objectives of the Progeny Testing Programme are:

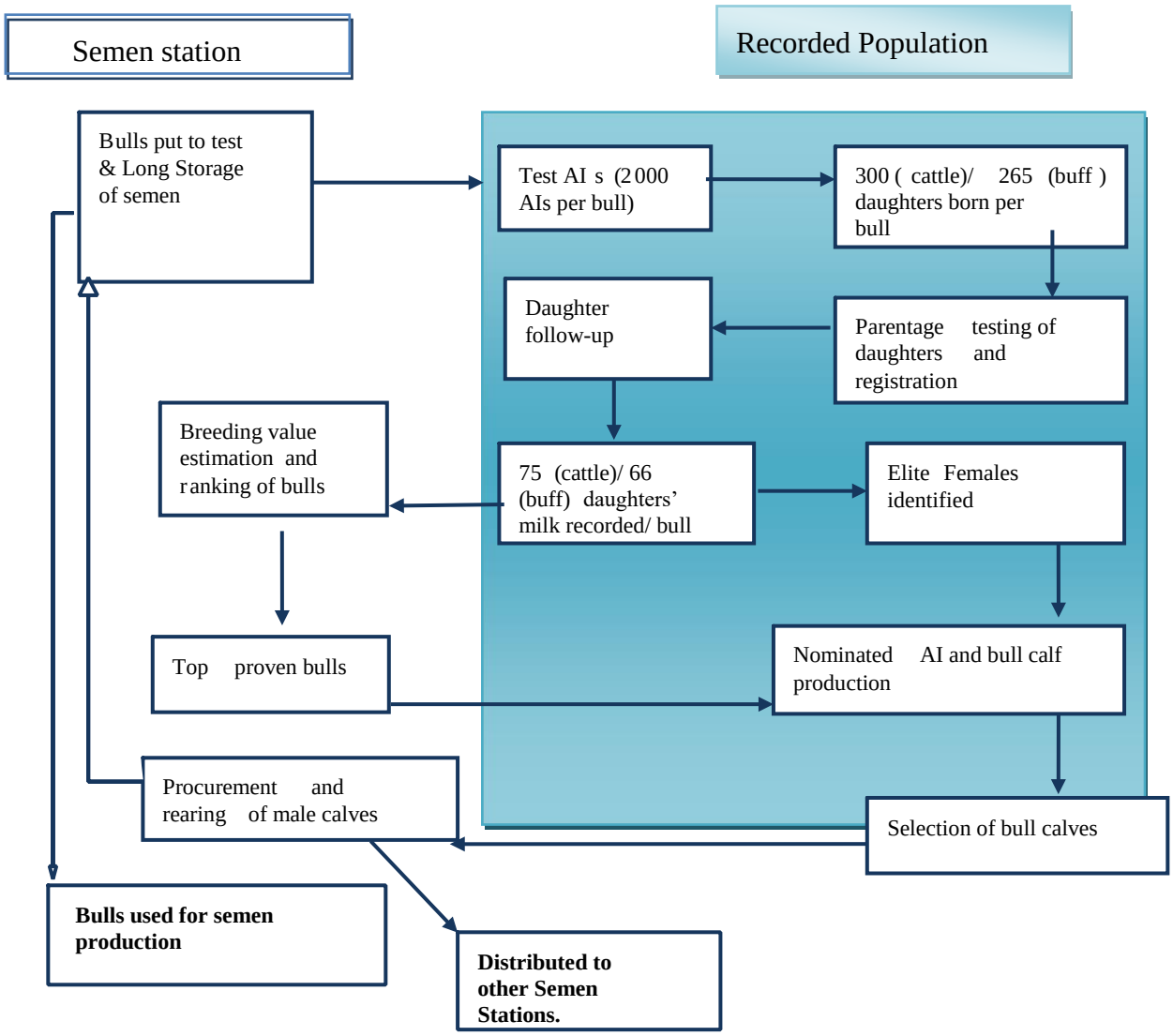
a) To produce the required high genetic merit bulls for semen stations through progeny testing
b) To establish a system of genetic evaluation of young bulls, bull dams and bull sires and their selection for continuous genetic improvement.
c) To achieve a steady genetic progress in the buffaloes or cattle population for milk, fat, SNF and protein yield and type characters in the villages where the progeny testing programme is implemented.

3. A schematic representation of various activities that should be taken up under a progeny testing programme is given in Figure 1.

4. Nominated Mating for production of bulls to be put under PT Programme

Nominated mating using semen of top proven bulls and elite females identified under PT area is taken up for production of bulls for semen production. Bulls with best breeding values BV/GBV are made available to semen stations. Out of the bulls distributed to semen stations only the best bulls are selected on the basis of BV, GBV and Dams lactation yield to put under test mating. Details of mechanism of procurement of bulls for semen production is given under para

Figure1: A Schematic representation of a progeny testing programme Standard



Operating Procedures (SOP) and Minimum Standards

5. Standard Operating Procedures (SOP)

5.1 Test Bulls The very best bulls that meet the "Standards of Genetic Merit of Breeding Bulls" as specified in the Minimum Standards for Production of Bovine Frozen Semen prescribed by DAHD, GOI should be put under test. Preference should be given to young bulls, less than 4 years in case of cattle and less than 5 years in case of buffaloes. A test bull should be inducted for test AI preferably after producing a minimum of 5000 doses – 2000 for test inseminations and 3000 for long term storage. The test doses should be produced at a Semen Station graded 'A' or 'B' by CMU, DAHD, GOI. The number of bulls put under test shall be raised from a minimum of 10 to start with and shall be increased to a maximum extent possible.

If a sufficient number of test bulls are not available with the semen station, semen doses (minimum 2000 doses for Test AIs and 3000 doses for long term storage) from quality bulls meeting “Standards of Genetic Merit of Breeding Bulls” as specified in the “Minimum Standards for Production of Bovine Frozen Semen” prescribed by DAHD, GOI, shall be procured from other grade ‘A’ or ‘B’ semen stations.

5.2 Information System

5.2.1 All data related to progeny testing programme such as Animal registration details, AI details, results of Pregnancy Diagnosis, Calving details, Milk recording, Milk component testing, animal re-registration details, Animal movement details, Animal ear tag change/renumbering details etc shall be captured through Bharat Pashudhan Portal.

5.3 Animal Identification

5.3.1 All female animals that are bred with test or nominated AI, all daughters that are born under the project through test AI, all milk recorded animals and all male and female calves that are born out of nominated AI shall be identified by applying ear tags as per prescribed method.

5.4 Operational area

5.4.1 PT Programme for a breed shall be taken up in a compact area where a sizeable number of breedable animals of the identified breed is available and a good AI infrastructure exists. Other factors that should be considered are: sale of animals is comparatively less, percentage of animals of the identified breed under AI coverage is high, aptitude and awareness of the farmers and AI service providers towards the programme is very good, performance of AI technicians is very good etc. AI centres shall be selected based on their performance. The number of centres should be such that all centres together perform minimum 2000 AIs per bull for all bulls put to test, in 12 -15 months period. In case of a Cluster AI centre, only as many villages around the main centre where close follow up, milk recording, supervision and monitoring of the activities is possible shall be included in the programme.

5.5 Test Inseminations

5.5.1 Minimum 2000 doses of each test bull shall be distributed amongst the project villages spread over a test insemination period to carry out at least 2000 test inseminations.

5.5.2 Test insemination period for a bull should be between 12-15 months.

5.5.3 If there exist different PT programmes for a breed in different locations, these PT programmes shall share minimum 1000 test doses and 2000 long term storage doses of at least 30% bulls being tested in their respective PT programme with other PT programme(s) during the same year of testing so that daughters of each bull are produced in all the locations.

5.5.4 The AI Service Provider shall arrange for regular supply of test doses and LN and other consumables to all their AI technicians.

5.5.5 A bull wise, centre wise and month wise semen distribution schedule for all the AI centres covered under the programme shall be prepared and the timely procurement of test doses from semen stations and their timely distribution to all AI centres as per the distribution schedule shall be ensured by the AI Service Provider.

5.5.6 The AI technician would inseminate animals with the test doses supplied to him for that month. When an animal is inseminated for the first time, the animal would be ear-tagged and registered as a dam under the programme and then inseminated. Subsequently, all the animals inseminated and not repeated will be examined for pregnancy after 90 days of AI and then all the pregnant animals are followed for calving and results are updated in Bharat Pashudhan Portal.

Note: At the time of pregnancy diagnosis or calving, if it is noticed that the inseminated animal has subsequently been inseminated by other service provider(s) or served by natural service bull(s), then the details of other service provider or natural service shall be updated in Bharat Pashudhan Portal*.*

5.6 Daughters' Registration

5.6.1 Upon follow up of calving or receiving the information about the birth of daughter, the AI technician along with the concerned supervisor and the Milk recorder should visit the animal and physically verify the animal and the ear tag number of the dam within 45 days of birth. He should also verify the insemination particulars of the dam for verifying the sire number. The daughter then shall be ear-tagged and particulars are entered in Bharat Pashudhan Portal.

5.6.2 Once the daughter is identified, AI Technician shall also record the body measurements to estimate initial body weight.

5.7 Parentage verification

5.7.1 Records of all daughters and male calves born of nominated AI, where the gestation period is found to be less than 265 days (290 days in buffaloes) and greater than 290 days (320 days in buffaloes), should be re-checked for the correct parentage. In all doubtful cases, a blood sample should be taken from both mother and progeny (daughter/ son) and semen sample from the sire, for parentage confirmation using DNA markers.

5.7.2 For parentage confirmation, blood samples from 5 randomly selected daughters registered in each AI centre per year and blood samples of all male calves registered out of nominated AI shall be collected.

5.7.3 A parentage verification database should be created to give feed back to the concerned AI Technicians and supervisors.

5.8 Follow up of Daughters

5.8.1 All daughters born under the programme shall be followed up after birth for growth, AI, pregnancy, calving, and lactation. The milk recorder shall visit all daughters of test bulls at an interval of at least 6 months for this purpose.

5.8.2 A monthly schedule for such visits shall be prepared. During such visits the milk recorder should check for the loss of ear tags, take body measurements and de-worm the daughters. Follow-up of daughter for growth shall be carried out at least at 6 monthly intervals, deworming every six months, and vaccination of all female calves between 4-8 months of age in the project villages for brucellosis**.**

5.8.3 The follow-up of the daughters shall continue till the daughter calves, dies or is sold, whichever is earlier. In case of loss of ear tags, the milk recorder should apply a new ear tag, record the particulars of new tag and report immediately.

5.8.4 Calf rallies shall be conducted at regular intervals in the project area.

5.9 Recording for body measurements of daughters

5.9.1 The first body measurements of heart girth and length of female calves born should be taken within 45 days of birth at the time of registration and shall be repeated at least at 6 monthly intervals. The first measurement should be taken up by the AI technician and the subsequent measurements by the milk recorder.

5.9.2 Body weight calculated based on Heart Girth and Body Length using the prescribed formula shall be compared with the standard body weight at that age to find out whether a calf is growing satisfactorily and accordingly a feedback should be given to the farmer.

5.9.3 Body length of calf means measurement in inches between point of shoulder and pin bone. Heart girth means circumference of thorax at the point of elbow. Body weight is calculated using the following formula:

$$\textbf{Body weight (Kgs)} = (\textbf{Hearth Girth (inches)})^2 * \textbf{Body Length (inches)}/660$$

5.10 Milk Recording

The key points to be considered for milk recording include:

5.10.1 Daughters born out of test inseminations shall be milk recorded for first three lactations. Besides daughters, other animals of the same species (up to a maximum of 5

animals) available with the farmer shall also be recorded for one lactation during that period, irrespective of lactation number (Parity).

5.10.2 The milk recording work should be assigned to exclusive milk recorders. In case an AI technician is covering only one village, he could be entrusted with the responsibility of milk recording.

5.10.3 An area assigned to one milk recorder would depend on the number of animals under milk recording and the spread of animals.

5.10.4 First recording should be carried out on or after 5 days of calving and not later than 25 days of calving.

5.10.5 Milk recording for an animal should be done once a month, morning and evening on the same day (also in the afternoon if three time milking is practiced) preferably on a fixed day of the month (plus or minus 5 days) at the place of milking.

5.10.6 A monthly milk recording schedule shall be prepared, detailing the animal to be recorded, order of recording, address and contact number of the farmer, name of the village, date and time of recording.

5.10.7 Milk recording shall be carried out using a GPS enabled Smart weighing scale (SWS). Total quantity of milk produced by the animal at farmers' household shall be weighed using the SWS along with GPS Coordinates (Latitude and Longitude). Captured data shall be forwarded to Bharat Pashudhan Portal. However, a transparent calibrated plastic jar with a sensitivity of 100 cc may be used in case of emergency situations when SWS is not working.

5.10.8 On each day of milk recording a milk sample should be taken in a sample bottle (during morning recording), properly labeled, recorded and sent to a laboratory for milk component analysis for fat, SNF, protein etc.

5.10.9 Every animal should be recorded both for milk volume and milk components on a monthly basis continuously for 11 times or until the animal becomes dry or is permanently lost from the system whichever is earlier.

5.10.10 If the animal becomes dry before 11 recordings, the dry date should be recorded invariably.

5.10.11 If weaning is not practiced by the farmer or if the farmer could not be motivated to practice weaning, at least on the day of milk recording, the calf should not be allowed to suckle its mother and the particulars should be recorded in Bharat Pashudhan Portal. Milk collected from all four quarters should be measured and the farmer should be advised to feed the calf separately.

5.10.12 Except during late lactations, milk yield should not be recorded on the day when it has dropped by 50% of the previous recording (respective morning or evening recording) or when the animal is suffering from some form of illness. In such cases the reason for drop should be recorded and the milk recording should be reattempted after a period of at least five days.

5.10.13 If the animal is milked only one time, then only that should be recorded and the other timing should be left blank or recorded zero.

5.10.14 The milk recorder shall also record the details of the milk recordings in a milk recording card that is kept with the animal owner.

5.10.15 Standard Lactation Yield of the milk recorded animal should be calculated using the Test Interval Method described by International Committee for Animal Recording (ICAR).

5.11 Procedures for supervision

The main points to be considered for putting in place an appropriate supervision system include:

5.11.1 Supervisor should exclusively be made responsible for supervising all the activities including milk recording. The number of supervisors should depend on the number of villages a supervisor can supervise in a month, the work load and the distance between the villages.

5.11.2 Each supervisor should every month check all the events happening in that month such as – 100% of daughters born, 100% of male calves reported born through nominated AI and at least 10% of randomly selected morning milk recordings, 30% each of subsequent body measurements, pregnancy results etc. in their assigned villages. The supervisor shall also validate 10% of milk recordings every month. He should submit a tour diary every month.

5.11.3 For checking the milk recordings, the supervisor should conduct the following:

a) Surprise checking: a surprise check by visiting the site of milking, at the time of the scheduled milk recording and check the procedure of recording, the records and the functionality of the equipment used.
b) Validation check: Alternatively, the supervisor, on the day of visit to a particular village, should visit a randomly selected animal, which is currently under recording, at the time of milking and measure the quantity of milk produced and record the data. This shall be used to compare the preceding milk recording data of the same animal.
c) Checking difference between GPS coordinates of milk recordings of same animal and physically verifying differences if any.

d) In addition to supervisors, activities should also be supervised and monitored by other officers through regular and surprise field visits for checking of milk recording and post milk recording validations, review meetings etc.

5.12 Body typing of daughters

All the daughters born to the test bulls and that are entering the milk recording phase should be subject to body typing. This should be done by the type classifiers who are trained in body typing of animals. The trained type classifiers should type and score the daughters.

5.13 Bull production and procurement

a) Breeding values (BV) (preferably Genomic Breeding Values - GBV) of animals will be estimated and published by the Breeding Value Estimation Committee constituted by DAHD, GOI.

b) The actual computation of breeding values shall be done using NDDB's computing facilities at a specified interval of time using all recorded data obtained from the Bharat Pashudhan database and following the models and methods approved by the BV Estimation Committee.

Note: Currently, BV for production traits is estimated using a Random Regression Test Day Animal model (TDRR - BLUP). In the case where records with pedigree are not available for any breed, BV shall be estimated based on dam records corrected for Herd (village or Tehsil based on number of records), Year of calving, Season of calving and Lactation Number. The BVs are expressed as a deviation from a rolling average of animals recorded in a particular project.

c) Every year, a minimum of five different bulls ranked top on the basis of breeding value shall be used for nominated AI to produce future test bulls. Here it may be noted that higher the intensity of selection applied in selecting bulls for nominated mating higher would be the genetic progress.

d) Top-ranked females declared elite based on breeding values shall be used for nominated AI. The number of elite females selected for nominated mating would depend on the number of bulls required for semen production for that breed.

e) In the case of new PT projects, for an initial period of one year, calculation of BV of dams will not be feasible. In such cases, out of dams under milk recording, nominated AI will be done on top 100 dams based on initial test day records. By the time calving of nominated cows occurs, the project will have complete lactation records of all nominated cows. The decision on bull calf procurement for semen production will be taken based on BV calculated based on milk production records available in the project at the end of the first year.

5.14 Male Calf Procurement and Rearing

The points to be considered while procuring male calves include:

a) A list of elite cow/buffalo along with BV/GBV and BV (or GBV) of a bull calf born out of nominated AI shall be communicated regularly to the projects by NDDB.

b) It is suggested that for selection and procurement of one bull calf for semen production, planning shall be done for the production of at least 3 male calves free from diseases. In the breeds where genomic breeding values are available, all male calves that are tested disease-free shall be genotyped. Subsequent to this, the top 1/3rd bull calves with best BVs (preferably GBV) shall be procured as per requirement. Applying a higher intensity of selection on selecting males for AI would lead to significantly higher genetic progress.

c) All male and female calves born out of nominated AI shall be registered in the Bharat Pashudhan Portal.

d) Bull calves shall be procured based on BV (preferably GBV) calculated by NDDB based on a method prescribed by the Breeding Value Estimation Committee. NDDB will provide a list of bull calves to be procured regularly to the projects based on the demand of bull calves of the particular breed in the country.

e) The male calves produced out of nominated AI selected for distribution shall be procured at the earliest possible to avoid loss of such high-quality bull calves.

f) It should be ensured that all the procured bull calves have a confirmed parentage using DNA markers, have physical attributes conforming to the standard breed characteristics and are free from any physical and congenital abnormalities.

g) It shall be ensured that the health guidelines prescribed shall be followed.

h) List of bull calves available for distribution after completion of mandatory quarantine and disease testing shall be communicated to NDDB on a monthly basis by each PT project.

5.15 Animal Health Protocols for personnel in Project Areas

5.15.1 All personnel working in close contact with the animals namely: AI technicians, milk recorders & supervisors have an important role to play as primary reporters of any adverse health event(s) occurring in their area of operation.

5.15.2 The milk recorder or the AI technician who observes any abnormal health event like high mortality, high rate of abortions/ retention of placenta, mastitis, symptoms of diseases like FMD etc. in his/her area of operation would report the same to an identified / Government appointed Animal Health Officer of the area through his superior.

5.15.3 Bio-security protocols for personnel: All AI technicians would need to follow certain hygienic practices that would minimize the spread of infection.

5.16 Minimum Standards to be achieved

The project shall ensure that the following minimum standards are achieved:

a) It would be ensured that annually minimum 10 bulls would be put to test for each breed. However, the number of bulls put under test shall be raised to a maximum extent possible.

b) All the Test bulls should meet the “Standards of Genetic Merit of Breeding bulls” as specified in the “Minimum Standards for Production of Bovine Frozen Semen” prescribed by DAHD, GOI.

c) The test doses should have been produced only at a Semen Station graded ‘A’ or ‘B’ by the Central Monitoring Unit (CMU), DAHD, GOI.

d) All data related to progeny testing programme shall be captured through Bharat Pashudhan Portal.

e) All efforts would be made to get complete first lactation records of about 70 daughters per bull spread over a minimum of 5 villages; however, breeding values of bulls put to test will not be published unless the results meet publication criteria decided by Breeding Value Estimation Committee.

f) If more than one PT programme is being implemented for a breed in different locations, it shall be ensured that complete first lactation records of about 70 daughters per bull is produced together by all these programmes.

g) At least 80% of the daughters that are tested for parentage using DNA markers shall have correct parentage as recorded.

h) A minimum of five different proven bulls every year having higher breeding values, with as high intensity of selection as possible (i.e. as less number selected out of total bulls, as possible) should be used for nominated AI to produce future test bulls.

i) Top ranked females declared elite based on breeding values shall be used for nominated AI. In absence of breeding value, females qualifying the dam’s yield criteria mentioned under “Standards of Genetic Merit of Breeding bulls” as specified in the Minimum Standards for Production of Bovine Frozen Semen prescribed by DAHD, GOI shall be selected for nominated AI to produce superior male calves.

j) All bull calves selected through nominated AI shall have confirmed parentage through DNA testing.

k) Both bull calves that are procured and their dams shall be free from TB, JD, Brucellosis, IBR and any physical deformities.

l) Achieve 80 % of all physical targets and qualify in annual evaluation.

Note: Disease testing protocol while procurement and rearing of bulls produced in PT projects should be same as MSP of Frozen Semen Production.

6. **Implementing Agency:**

6.1 National Dairy Development Board will be implementing Agency for implementation of the project and funds will be released directly to NDDB. Implementation of the project will be monitored as per the minimum standards formulated for implementation of the project.

6. **Participating Agencies:**

6.2 Participating agencies and breeds covered under the programmes are depicted in the following table:

SN	Breed	Participating Agency	State
1	Murrah	NDS (ABRO, Salon)	Uttar Pradesh
2	Murrah	HLDB	Haryana
3	Murrah	PLDB	Punjab
4	Murrah	NDS (SAG Bidaj)	Gujarat
5	JYCB	APLDA	Andhra Pradesh
8	JYCB	TCMPF	Tamil Nadu
6	HFCB	KLDB	Kerala
7	HFCB	NDS (SAG Bidaj)	Gujarat
9	Mehsana	Mehsana Milk Union	Gujarat
10	Mehsana	Banas Milk Union	Gujarat
11	Jersey	HPLPDB	Himachal Pradesh
12	Sahiwal	Sri Ganganagar District Co-operative Milk Producers' Union Ltd (GANGMUL).	Rajasthan
13	Sahiwal	PLDB	Punjab
14	Gir	NDS (SAG Bidaj)	Gujarat

Annexure-III

PEDIGREE SELECTION

1. Introduction

1.1 One of the key factors affecting productivity is the genetic ability of an animal for milk production, which is an inherited character, while others provide an enabling environment. The breeding bull contributes significantly in enhancing the genetic potential of its progenies for economically important traits like milk production, fat, SNF and protein production, fertility, body conformation etc. Therefore, building an infrastructure for evaluation and production of breeding bulls with high genetic potential for milk production and other important traits and an infrastructure to transmit their genetic potential to maximum number of progenies is very important in any animal breeding programme.

1.2 Selection of bulls could be done through methods like Progeny Testing (PT) or Pedigree Selection (PS). Among the indigenous breeds, efforts are to be made to select bulls through Pedigree Selection owing to lack of large AI coverage and smaller population that makes Progeny Testing unfeasible. Selecting the best bulls based on the performance of their parent's (milk production of dams in case of milk production traits) forms the basis of Pedigree Selection. This document describes the Standard Operating Procedures (SOP) and minimum standards for implementing a Pedigree Selection programme for Cattle and Buffalo under field conditions and for production of quality bulls by inseminating best performing elite females owned by farmers using semen of high genetic merit bulls

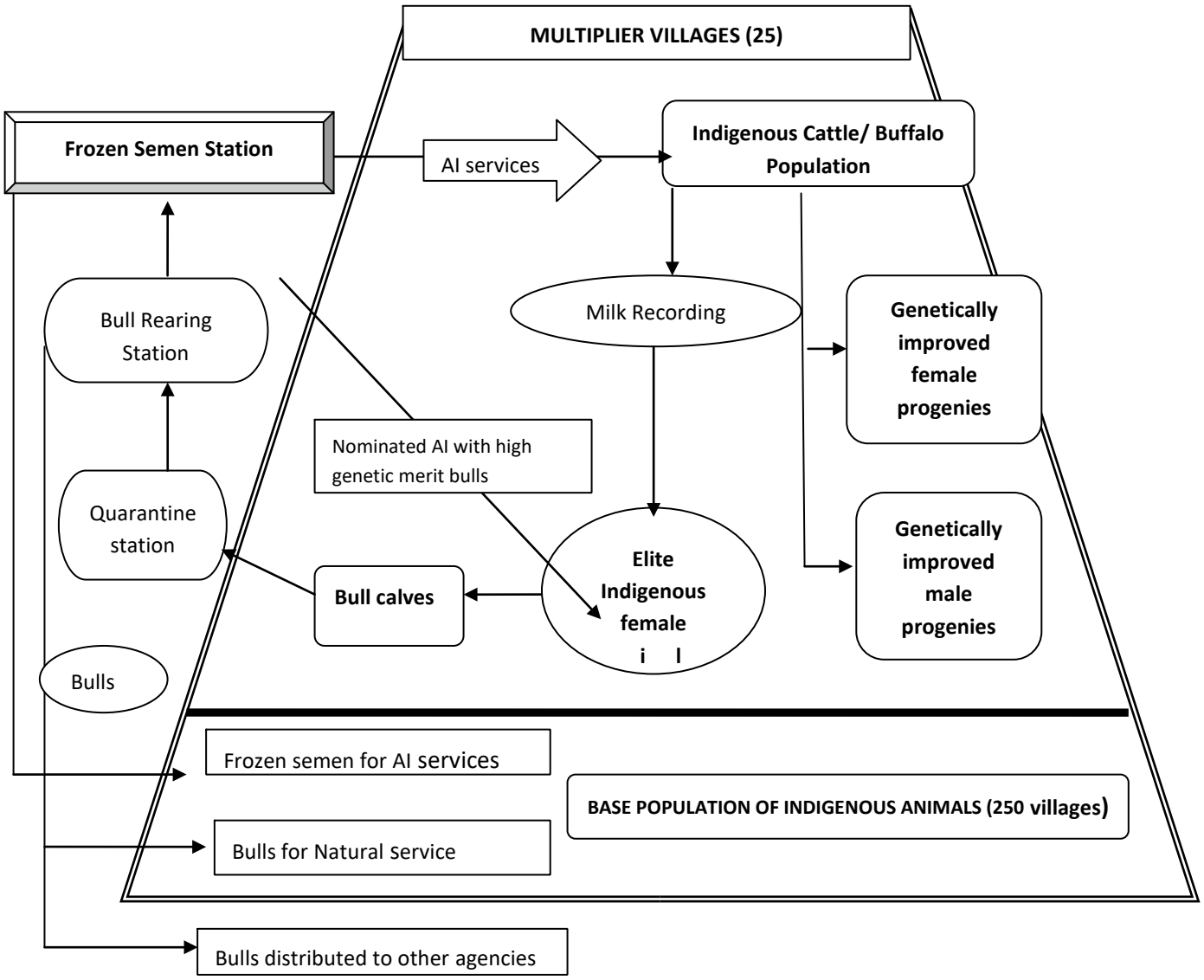
2. Objectives of the Programme

The main objectives of the programme are:

a) Developing indigenous breeds in their native breeding tracts
b) Improving the genetic potential of indigenous breeds for milk production in their native tracts
c) Producing genetically superior quality bulls for semen production stations of the country
d) Ensuring active participation of the communities in breed development programmes

A schematic representation of various activities that should be taken up in a Pedigree Selection programme is given in Figure 1.

Figure 1: Schematic representation of the Technical programme Standard Operating Procedures (SOP) and Minimum Standards



3. Standard Operating Procedures (SOP): For ongoing PS programme with AI network

3.1 Bulls and semen used in AI programme in PS area

3.1.1 Semen from at least 5 bulls of high genetic merit shall be used in the AI programme annually in the PS area.

3.1.2 AI bulls should be changed / rotated among the multiplier villages at least once in every 3 years in order to keep inbreeding under control.

3.1.3 Semen produced from a semen station graded “A” or “B” by CMU, DAHD, GOI shall only be used.

3.2 Information System

3.2.1 All data such as Animal registration details, AI details, results of Pregnancy Diagnosis, Calving details, Milk recording, Milk component testing, animal re-registration details, Animal movement details, Animal ear tag change/renumbering details etc. shall be captured through Bharat Pashudhan Portal.

3.3 Animal Identification:

All female animals inseminated under AI programme, animals under milk recording, all females that are born under the general AI programme and all male calves and female calves born out of nominated AI (best semen used on best recorded females available in PS area) shall be identified by applying ear tags as per prescribed method.

3.4 Artificial Insemination and follow up

3.4.1 When an animal is inseminated for the first time, the animal would be ear-tagged and registered as a dam under the programme and then inseminated. Subsequently, all the animals inseminated and not repeated will be examined for pregnancy after 90 days of AI and then all the pregnant animals are followed for calving and results are updated in Bharat Pashudhan Portal.

Note: At the time of pregnancy diagnosis or calving, if it is noticed that the inseminated animal has subsequently been inseminated by other service provider(s) or served by natural service bull(s), then the details of other service provider or natural service shall be updated in Bharat Pashudhan Portal*.*

3.5 Registration of calves:

3.5.1 Upon follow-up of calving or receiving the information about the birth of female or male calf born from nominated AI, the AI technician along with the concerned supervisor and the Milk recorder / local resource person shall visit the calf and physically verify the animal. The ear tag number of the dam, insemination particulars of the dam and the sire number shall be checked. The calf shall be ear tagged within 45 days of birth and the particulars entered in Bharat Pashudhan Portal.

3.6 Parentage verification:

3.6.1 Records of all female and male calves born of nominated AI in PS area where the gestation period is found to be less than 265 days (290 days in buffaloes) and greater than

290 days (320 days in buffaloes) would be re-checked for correct parentage. In all doubtful cases, a blood sample would be taken from both mother and progeny (female / male) and semen sample from the sire, for parentage confirmation using DNA markers.

3.6.2 Blood sample from randomly selected five female registered out of AI per AI centre shall be sent for DNA parentage verification every year.

3.6.3 A blood sample of all male calves registered out of nominated AI in PS area would be collected for parentage confirmation.

3.6.4 Parentage verification database would be created to give feed back to the concerned AI Technicians and supervisors.

3.7 Calf rallies:

3.7.1 Calf rallies shall be conducted in the area to create awareness about the programme and to provide platform to the farmers to exhibit their improved animals.

3.8 Milk Recording

The key points to be considered for milk recording in the PS area include:

3.8.1 The milk recording work should preferably be assigned to exclusive milk recorders. In case an AI technician is covering only one village/ the number of AI performed is low, he could be entrusted with the responsibility of milk recording also.

3.8.2 Area assigned to one milk recorder would depend on the number of animals under milk recording and the spread of animals.

3.8.3 First recording would be carried out on or after 5 days of calving and not later than 25 days of calving.

3.8.4 Milk recording for an animal should be done once a month, morning and evening on the same day (also in the afternoon if three time milking is practiced), preferably on a fixed day of the month (plus/ minus 5 days) at the place of milking.

3.8.5 A monthly milk recording schedule shall be prepared, detailing the animal to be recorded, order of recording, address and contact number of the farmer, name of the village, date and time of recording.

3.8.6 Milk recording shall be carried out using a GPS enabled Smart weighing scale (SWS). Total quantity of milk produced by the animal at farmers' household shall be weighed using the SWS along with GPS Coordinates (Latitude and Longitude). Captured data shall be forwarded to Bharat Pashudhan Portal. However, a transparent calibrated plastic jar with a sensitivity of 100 cc may be used in case of emergency situations when SWS is not working.

3.8.7 On each day of milk recording a milk sample should be taken in a sample bottle (during morning recording), properly labeled, recorded and sent to the laboratory for milk component analysis.

3.8.8 Every animal should be recorded both for milk volume and milk components on a monthly basis continuously for 11 times or until the animal becomes dry or is permanently lost from the system whichever is earlier.

3.8.9 If the animal becomes dry before 11 records, the dry date should be recorded invariably.

3.8.10 If weaning is not practiced by the farmer or if the farmer could not be motivated to practice weaning, at least on the day of milk recording the calf should not be allowed to suckle its mother and the particulars should be recorded in Bharat Pashudhan Portal. Milk collected from all four quarters should be measured and the farmer should be advised to feed the calf separately.

3.8.11 Except during late lactation, milk yield should not be recorded on the day when milk has dropped suddenly by 50% of the previous recording (respective morning or evening recording) or when the animal is suffering from some form of illness. In such cases the reason for sudden drop should be recorded and the milk recording should be reattempted after a period of at least five days.

3.8.12 If the animal is milked only one time, then only that would be recorded and the other timing would be left blank or recorded zero.

3.8.13 The milk recorder shall also record the details of the milk recordings in a milk recording card that is kept with the animal owner.

3.8.14 Standard Lactation Yield of the milk recorded animal should be calculated using the Test Interval Method described by International Committee for Animal Recording (ICAR).

3.8.15 It is also suggested that whenever any animal with the farmer is recorded, other animals of the same breed (up to a maximum of 5 animals) available with the farmer shall also be recorded for one lactation during that period, irrespective of lactation number (Parity).

3.9 **Procedures for supervision**

The main points to be considered for putting in place an appropriate supervision system include:

3.9.1 Supervisor should exclusively be made responsible for supervising all the activities including milk recording. The number of supervisors would depend on the number of villages a supervisor can supervise in a month, the work load and the distance between the villages.

3.9.2 Each supervisor should every month check all the events happening in that month such as – 100% of female born and 100% of male calves reported born to nominated AI,

randomly check at least 10% of morning milk recordings and 30% pregnancy diagnosis results in their assigned villages. The supervisor shall also validate 10% of milk recordings every month. He should submit a tour diary every month.

3.9.3 For checking the milk recordings, the supervisor should conduct the following:

3.9.3.1 **Surprise checking:** a surprise check by visiting the site of milking, at the time of the scheduled milk recording and check the procedure of recording, the records and the functionality of the equipment used.

3.9.3.2 **Validation check:** Alternately, the supervisor should, on the day of visit to a particular village, visit a randomly selected animal, which is currently under recording, at the time of milking and measure the quantity of milk produced and record the data. This shall be used to compare with the preceding milk recording data of the same animal.

3.9.3.3 Checking difference between GPS coordinates of milk recordings of same animal and physically verifying differences if any.

3.9.3.4 In addition to supervisors, project activities should also be supervised and monitored by other Project officers, through regular and surprise field visits for checking of milk recording and post milk recording validations, review meetings etc.

4 Bull production and procurement

4.1 Breeding values (BV) (preferably Genomic Breeding Values - GBV) of male calves produced under PS programme will be estimated and published by the Breeding Value Estimation Committee constituted by DAHD, GOI.

4.2 The actual computation of breeding values shall be done using NDDB's computing facilities at a specified interval of time using all recorded data obtained from the Bharat Pashudhan database and following the models and methods approved by the BV Estimation Committee.

Note: Currently, BV for production traits is estimated using a Random Regression Test Day Animal model (TDRR - BLUP). In the case where records with pedigree are not available for any breed, BV shall be estimated based on dam records corrected for Herd (village or Tehsil based on number of records), Year of calving, Season of calving and Lactation Number. The BVs are expressed as a deviation from a rolling average of animals recorded in a particular project.

4.3 Top-ranked females declared elite based on breeding values shall be used for nominated AI. The number of elite females selected for nominated mating would depend on the number of bulls required for semen production for that breed.

4.4 In the case of new PS projects, for an initial period of one year, calculation of BV of dams will not be feasible. In such cases, out of dams under milk recording, nominated AI will be done on top 100 dams based on initial test day records. By the time calving of nominated

cows occurs, the project will have complete lactation records of all nominated cows. The decision on bull calf procurement for semen production will be taken based on BV calculated based on milk production records available in the project at the end of the first year.

4.5 Male Calf Procurement and Rearing

4.5 The points to be considered while procuring male calves include:

4.5.1 A list of elite cow/buffalo along with BV/GBV and BV (or GBV) of a bull calf born out of nominated AI shall be communicated regularly to the projects by NDDB.

4.5.2 It is suggested that for selection and procurement of one bull calf for semen production, planning shall be done for the production of at least 3 male calves free from diseases. In the breeds where genomic breeding values are available, all male calves that are tested disease-free shall be genotyped. Subsequent to this, the top 1/3rd bull calves with best BVs (preferably GBV) shall be procured as per requirement. Applying a higher intensity of selection on selecting males for AI would lead to significantly higher genetic progress.

4.5.3 All male and female calves born out of nominated AI shall be registered in the Bharat Pashudhan Portal.

4.5.4 Bull calves shall be procured based on BV (preferably GBV) calculated by NDDB based on a method prescribed by the Breeding Value Estimation Committee. NDDB will provide a list of bull calves to be procured regularly to the projects based on the demand of bull calves of the particular breed in the country.

4.5.5 The male calves produced out of nominated AI selected for distribution shall be procured at the earliest possible to avoid loss of such high-quality bull calves.

4.5.6 It should be ensured that all the procured bull calves have a confirmed parentage using DNA markers, have physical attributes conforming to the standard breed characteristics and are free from any physical and congenital abnormalities.

4.5.7 It shall be ensured that the health guidelines prescribed shall be followed.

4.5.8 List of bull calves available for distribution after completion of mandatory quarantine and disease testing shall be communicated to NDDB on a monthly basis by each project.

4.6 Animal Health Protocols for personnel in Project Areas

4.6.1 All personnel working in close contact with the animals namely: AI technicians, milk recorders & supervisors have an important role to play as primary reporters of any adverse health event(s) occurring in their area of operation.

4.6.2 The milk recorder or the AI technician who observes any abnormal health event like high mortality, high rate of abortions/ retention of placenta, mastitis, symptoms of diseases like FMD etc. in his/her area of operation would report the same to an identified / Government appointed Animal Health Officer of the area through his superior.

4.7 **Bio-security protocols for personnel:** All AI technicians would need to follow certain hygienic practices that would minimize the spread of infection.

4.8 Minimum Standards to be achieved

4.8.1 The programme shall ensure that the following minimum standards are achieved:

4.8.2 It would be ensured that semen from at least 5 bulls of high genetic merit bulls shall be used in the AI programme annually in PS area.

4.8.3 Semen produced from a semen station graded “A” or “B” by DAHD shall only be used.

4.8.4 AI bulls should be changed / rotated among the multiplier villages at least once in every 3 years in order to keep inbreeding under control.

4.8.5 All data related to Pedigree Selection programme shall be captured through Bharat Pashudhan Portal.

4.8.6 At least 80% of the calves that are tested for DNA based parentage tests shall have correct parentage as recorded.

4.8.7 All bulls whose semen is used in the AI programme should have dam’s milk yield more than the yield specified in the “Standards of Genetic Merit of Breeding bulls” in the Minimum Standards for Production of Bovine Frozen Semen prescribed by DAHD.

4.8.8 Cows/ buffaloes selected for nominated AI shall have milk yield recorded for a complete lactation and have milk yield more than the yield specified in the “Standards of Genetic Merit of Breeding bulls” in the Minimum Standards for Production of Bovine Frozen Semen prescribed by DAHD.

4.8.9 All bull calves selected through nominated AI shall have confirmed parentage through DNA testing.

4.8.10 Both bull calves that are procured and their dams shall be free from TB, JD, Brucellosis, IBR and any physical deformities.

4.8.11 Achieve 80 % of all physical targets and qualify in annual evaluation.

4.8.12 The establishment of Central herd Registration Scheme will be deployed for monitoring and implementation of pedigree selection programme.

Note: Disease testing protocol while procurement and rearing of bulls produced in PS projects should be same as MSP of Frozen Semen Production.

5 **Implementing Agency:**

National Dairy Development Board will be implementing Agency for implementation of the project. Implementation of the project will be monitored by NDDB as per the minimum standards formulated for implementation of the project.

6 Participating Agencies:

Participating agencies and breeds covered under the programmes are depicted in the following table:

SN	Breed	Participating Agency	State
1	Hariana	HLDB	Haryana
2	Jaffrabadi	NDS (SAG Bidaj)	Gujarat
3	Kankrej	Banas Milk Union.	Gujarat
4	Nili-Ravi	PLDB	Punjab
5	Pandharpuri	MLDB	Maharashtra
6	Tharparkar	RLDB	Rajasthan
7	Rathi	URMUL Trust	Rajasthan
8	Gaolao	MLDB	Maharashtra
9	Banni	Sarhad Dairy (Kutch District Cooperative Milk Union)	Gujarat

.

Annexure-IV

NATIONAL MILK RECORDING PROGRAMME

1. Objective:

1.1 The major objectives of National Milk Recording Programme are:

- To locate superior germplasm in breeding tracts / milk pockets
- To introduce systematic milk recording and promote breeding with HGM bulls
- To calculate genetic gain among bovines
- To collect and publish production and breeding records of registered animals
- To create awareness among farmers and improve their income.

1.2 NDDB has been assigned the role of Implementing Agency (IA) for this project. NDDB will implement the project with the help of Participating Agencies (PA), like Milk Unions, State AHDs, State LDBs, Vet. Colleges, ICAR institutions, Trusts, NGOs etc, that has its own AI/Milk recording network or is willing to establish recording network in the selected area. Participating Agencies (PA) and Project Area would be identified by NDDB based on Cattle and Buffalo breeds available in the area, milch animal population and existing network of an agency. NDDB will train the field personnel, release funds and monitor the project activities in the field.

1.3 NMRP would be implemented across the country in modular form. 45 milk recording units (other than those of PT/PS projects) would be identified wherein milk recording could be conducted by identified PAs. Each of such milk recording unit (similar to a PS project) would record milk yield following the Standard Operating Procedures (SOP) attached as Appendix-I. The PA will also arrange collection of blood samples from recorded females for future genomic selection activities.

2. Major Activities:

Following are the major activities to be carried out for the initiation of the project:

1. Identification of areas (up to districts/tehsils level) breeding tract of various breeds for establishing milk recording units on the basis of statistical sampling and so that data generated would be meaningful and statistically significant..
2. Suitable PA would be selected from the agencies working in the identified areas.
3. Meeting with the PAs would be held to explain detail about the project, SOPs, fund flow mechanism monitoring mechanism, sample logistics, location for milk analysers, manpower recruitment etc.
4. If agreed, PA would prepare an action plan with clear physical targets and financial provisions and submit the same NDDB.
5. The action plan to be placed before PMC for RGM for approval. All the data would be captured through Bharat Pashudhan Application.
6. PAs have to open a separate bank account for NMRP and funds would be released for implementation as per RGM norms.

Appendix –I

Standard Operating Procedures (SOP) for implementing National Milk Recording Programme for Cattle and Buffalo

1. Foreword

In dairy sector, performance recording of bovines forms an integral part of scientific animal husbandry practices for the ultimate benefit and further upliftment of socio-economic status of livestock owners. The performance comparison of various breeds in different geographical areas and in different conditions provide valuable information on breed compatibility, cost economics of production, impact of various interventions and policies required in various areas for enhancing productivity of bovines.

It also serves as the basis for selection of animals for scientific breeding to produce next generation offspring, expected to provide better profits to livestock owners though increased milk productivity. Progeny Testing (PT) and Pedigree Selection (PS) programmes implemented under Rashtriya Gokul Mission are source of animal-wise reliable performance data on milk production, milk composition and reproduction aspects of cattle and buffaloes. The data at present is used in selection programme and implementation of Genomic Selection for heifers and bulls.

However, PT/PS programmes have their practical limitation in geographical spread. They can exploit maximum benefit if larger reference population for various breeds of bovines is available.

National Milk Recording Programme (NMRP) is aimed to implement performance recording of bovines throughout the country, capturing untapped geographies, with wide scale/coverage, to address existing gaps and further improve our efforts for speedy productivity enhancement, ultimately benefitting livestock owners.

2. Objectives of the Programme

2.1 The main objectives of the National Milk Recording Programme are:

- To locate superior germplasm in breeding tracts/milk pockets.
- To introduce systematic milk recording and promote breeding with High Genetic Merit bulls.
- To calculate genetic gain among bovines.
- To collect and publish production and breeding records of registered animals.
- To create awareness among farmers and improve their income.

2.2 NMRP would be implemented across the country in modular form. Initially, 45 milk recording units (other than those of PT/PS projects) would be identified wherein milk recording could be conducted by identified Participating Agencies (PA) which may include Milk Unions, State Animal Husbandry Departments, State Livestock Development Boards, Veterinary Colleges, ICAR institutions, Trusts, Non-Governmental Organizations etc.

2.3 Each such milk recording unit (similar to a PS project) would milk record animals in identified 45 milk recording centres following Standard Operating Procedures (SOP) that follow.

3. Standard Operating Procedures (SOP)

3.1 Operational area

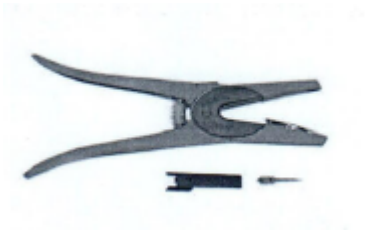
NMRP for a breed shall be taken up in a compact area/centre/village where at least 1000 breedable animals are available. In case of a cluster centre, only as many villages around the main centre where close follow up, milk recording, supervision and monitoring of the activities is possible shall be included in the programme.

3.2 Animal Identification

3.2.1 All animals enrolled under the project shall be identified by applying ear tags.
Only polyurethane laser printed ear tags having a 12 digit number and a bar code shall be used. The numbering system followed shall be unique with the last digit of the number being a "check digit" to ensure that no two animals are tagged with the same number. Only numbers supplied by an agency identified by DAHD shall be used for unique identification of animals.

Figure A.1: Ear Tag

Figure A.2: Tag Applicator



3.2.2 The specifications for the ear tag shall be: The male tag as a button shall be with a minimum diameter of 27 mm with a metal point and the flag shaped female tag with a closed head shall be with a minimum size of 55 x 65 mm. 12 digits to be printed in two rows of six digits each; second/lower six digits shall be relatively much larger than first/upper six digits. The ear tag shall be applied inside the ear of animals, in the center of the ear lobe with the female part of the tag inside the ear.

Figure A.3: Ear Tagged animal

If the ear tag falls off, a new ear tag shall be applied within 10 days and the information shall be immediately updated.

4. Information System.

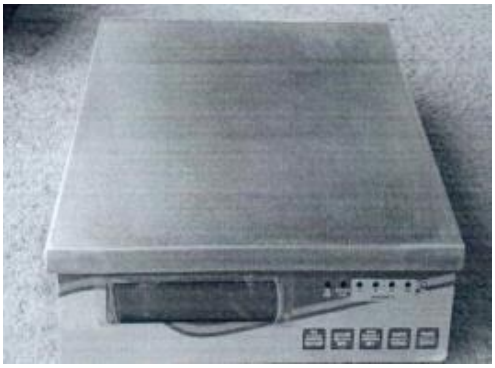
All data related to NMRP shall be captured through Bharat Pashudhan. application or any other software as indicated by National Dairy Development Board.

5. Milk Recording

The key points to be considered for milk recording include:

a. Animal in any lactation may be considered for inducting under milk recording.
b. Preference may be given to farmers having larger herd size. In such case, all animals in his herd shall be recorded.
c. Preference shall also be given to younger animal rather than very aged/diseased animal (either currently or in the past),
d. The milk recording work shall be assigned to exclusive milk recorders who have no other assignments during milk recording timings.
e. An area assigned to one milk recorder would depend on the number of animals under milk recording and the spread of animals.
f. First recording shall be carried out on or after 5 days of calving and not later than 25 days of calving.
g. Milk recording for an animal shall be done once a month, morning and evening on the same day (also in the afternoon if three times milking is practiced) preferably on a fixed day of the month (plus or minus 5 days) at the place of milking.
h. A monthly milk recording schedule shall be prepared, detailing the animal to be recorded, order of recording, name, address and contact number of the farmer, name of the village, date and time of recording.
i. Milk recording shall be carried out using a GPS enabled Smart weighing scale (SWS) or weighing scale that can transmit data to mobile device having BharatPashudhan application directly. Total quantity of milk produced by the animal at farmers' household shall be weighed using the SWS along with GPS Coordinates (Latitude and Longitude). Captured data shall be forwarded to Bharat Pashudhan application.

Figure A.4: Smart Weighing Scale



j. On each day of milk recording, a milk sample shall be taken in a sample bottle (during morning recording), properly labelled, recorded and sent to a laboratory for milk component analysis for fat, SNF, protein etc.
k. Every animal shall be recorded both for milk volume and milk components on a monthly basis continuously for 11 times or until the animal becomes dry or is permanently lost from the system whichever is earlier.
l. If the animal becomes dry before 11 recordings, the dry date shall be recorded invariably.
m. If weaning is not practiced by the farmer or if the farmer could not be motivated to practice weaning, at least on the day of milk recording, the calf shall not be allowed to suckle its mother and the particulars shall be recorded in Bharat Pashudhan application. Milk collected from all four quarters shall be measured and the farmer shall be advised to feed the calf separately.
n. Except during late lactations, milk yield shall not be recorded on the day when it has dropped by 50% of the previous recording (respective morning or evening recording) or when the animal is suffering from some form of illness. In such cases, the reason for drop shall be recorded and the milk recording shall be reattempted after a period of at least five days.
o. If the animal is milked only one time, then only that shall be recorded and the other timing shall be left blank or recorded zero.
p. The milk recorder shall also record the details of the milk recordings in a milk recording card that is kept with the animal owner.
q. Standard Lactation Yield of the milk recorded animal shall be calculated. using the Test Interval Method described by International Committee for Animal Recording (ICAR).

6. Blood sample collection and dispatch

6.1 Procedures for supervision

For checking the milk recordings, the supervisor shall conduct the following:

a. Surprise checking: a surprise check by visiting the site of milking, at the time of the scheduled milk recording and check the procedure of recording, the records and the functionality of the equipment used.
b. Validation check: Alternatively, the supervisor, on the day of visit to particular village, shall visit a randomly selected animal, which is currently under recording, at

the time of milking and measure the quantity of milk produced and record the data. This shall be used to compare the preceding milk recording data of the same animal.

c. Checking difference between GPS coordinates of milk recordings of same animal and physically verifying differences if any.
d. In addition to supervisors, activities shall also be supervised and monitored by other officers through regular and surprise field visits for checking of milk recording and post milk recording validations, review meetings etc.

6.2 Collection of reproduction details, disease incidence and feeding information

i. As far as possible, the PA shall arrange to record all inseminations, pregnancy diagnosis results and calving information on animals under milk recording.
ii. H PA shall also arrange to record all treatments done to the animal under milk recording by a veterinarian in the area.
iii. On each milk recording day, the Milk recorder should ask relevant questions to the farmer to capture incidences of diseases (if any) to the particular animal under milk recording.
iv. The supervisor will conduct a quarterly survey for each animal under milk recording and collect information about feeding practices and cost of various feed ingredients and any other items as directed by Implementing Agency.

Annexure-V

INDUCTION OF COMMUNITY RESOURCE PERSON/ MULTI PURPOSE AI TECHNICIANS IN RURAL INDIA (MAITRIs)

1. Introduction

1.1 Artificial insemination is important tool for enhancing milk production and productivity of bovines. After making several efforts AI coverage in the country is still limited to 30% of the breedable bovines and 70% of the breedable animals are covered through scrub bulls of unknown genetic merit. In developed nations 100% of the bovine population is under Artificial insemination coverage.

1.2 Induction of Community resource person /Multi-Purpose AI technicians in Rural India (MAITRIs): One of important impediment in extending AI coverage in the country is shortage of trained AI technicians. For effective AI coverage about 2,02,469 AI technicians will be required against this1,45,586 AI technicians are available in the country. Thus additional 50,000 AI technicians will be required for extension of AI coverage from 30% to 70%. Under the scheme it is proposed to establish 14,600 MAITRI centers in 2025-26. Funds under the component would be made available for: i) procurement of equipment and ii) training of community resource person/ MAITRIs. Efforts will be made to augment resources for training of Community resource person/ MAITRIs from PMKVY/DDKV scheme and using existing veterinary colleges for imparting quality training to Community resource person/ MAITRIs**.**

2. Objectives:

(i) Provide quality training to educated rural youth to deliver artificial insemination services and veterinary first aid at farmers' doorstep on self sustainable basis.
(ii) Enhancing AI coverage from 30% to 70% of the breedable bovine females in a time bound manner;
(iii) Establishment of AI technicians through provisions of AI equipments /consumables after training

3. Induction of Community resource person/ MAITRIs:

3.1 The project will accomplish training of **Community resource person**/ MAITRIs through existing AI training institutes already accredited by Central Monitoring Unit of DAHD with State Animal Husbandry Departments, Dairy Cooperatives, reputed NGOs (BAIF and JK Trust) and National Dairy Development Board (NDDB). Minimum requirement for training institute is at Appendix-I

3.2 The Veterinary Universities (13)/ Veterinary Colleges (41) managing large breeding farms and sufficient number of animals for practical training may also be allowed to conduct training.

3.3 After training AI technicians will be established as Community resource person/ MAITRIs in their respective Gram Panchayats by providing AI equipments and maintaining regular delivery of AI consumables in the form of semen doses and liquid nitrogen.

4. Target Segment/ Beneficiaries

4.1 The project will create direct employment opportunities for 90980 eligible educated rural youth.

4.2 Eligibility criteria for selection of trainee:

4.2.1 Community resource person/ MAITRIs shall be chosen from unemployed educated rural youth so as to generate employment. These workers will be chosen from the local area, as they know the area and utility of the timely AI service. Pashu Sakhis established under DAY NRLM may also be selected by the States for training and inducted as Community resource person/ MAITRIs

4.2.2 Minimum education qualification: 12th Pass and minimum age for AI workers may be fixed at 18 years by IA.

5. Curriculum and Standards:

5.1 Curriculum

Community resource person/ MAITRIs will be trained using uniform training module developed and approved by DAHD. IA/AITI will obtain approval of DAHD for making changes in the approved syllabus if any. Detailed curriculum is given at Appendix-II.

5.2 Duration of Training:

5.2.1 Community resource person/ MAITRIs shall be trained at the accredited training institutes for duration of 3 months (1 month classroom training and 2 month practical training). During the training regular test and exams will be conducted by AITI at regular interval.

5.2.2 Community resource person/ MAITRIs proposed to be established under RGM by IAs/PIAs will be multipurpose workers along with AI they will take up:

- veterinary first aid,
- vaccination,
- agent for livestock insurance,
- ration balancing,
- milk recording,
- data entry in national database,
- agent for distribution of fodder seeds root slips and stem slips etc.
- Demonstration on feed management, health management breeding management will also be conducted through Community resource person/ MAITRIs under RGM

5.3 Mobilization of Candidates:

A committee shall be constituted by District Veterinary officer of the concerned state for selection of the candidates as per requirement in the district. Preference will be given to local

educated unemployed rural youth especially of dairy farmers registered under co-op societies and migrant workers returning home. Gampanchayats will be involved at all stages in the selection of trainee. Only candidates interested in working as MAITRIs will be selected.

5.4 Registration of Trained Community resource person/ MAITRIs

5.4.1 After completion of training, certificate and Registration Number will be issued to Community resource person/ MAITRIs by the concerned training institute. All the Community resource person/ MAITRIs with AI service providers will be registered by the concerned State Animal Husbandry Department.

5.4.2 The Community resource person/ MAITRI ID card shall have following: Registration No. : starting with state code (two alphabets as used in vehicle number) **/**AITI code (3 alphabets) **/**F or R (F for Fresher and R for existing AIT who has attended refresher training)**/**five digit serial number (unique serial no. for the AITI) ***e.g.HR/ROH/F/00001*** **means** Community resource person/ **MAITRI of Haryana State trained at accredited AI Training institute at Rohtak in Fresher Training on AI with serial number of 00001.**

- Passport size recent coloured photo
- Name
- Father's Name
- Date of Birth
- Date of attending last fresher or refresher training program
- Expiry date (based on due date for next refresher training)
- Aadhar Number
- Blood Group
- Present Address

All the Community resource person/ MAITRIs working in the State will be registered by the State Animal Husbandry Department.

5.5 Retraining/Refresher training of Community resource person/ MAITRIs

If Community resource person/ MAITRIs are found to be deficient in their skill, then they will be retrained at accredited training institutes for duration of 5 days. All Community resource person/ MAITRIs will be retrained after every 3 year for duration of 5 days at accredited institutes.

6. Payout Package

6.1 Cost of Training

The cost of the training to be ₹ 31,000/trainee for a minimum batch size of 30 trainee / batch with duration of training of 90 working days. The training includes 1 month classroom training programme and 2 month practical training programme. The training cost per trainee will also include lodging and boarding of trainee, strengthening of training centre, consumables and printing of training modules in local languages. The breakup of the cost of training is given in the following table:

Item wise cost of training for a batch size of 100 trainee

S. No.	Item	Cost (in ₹)
1	Cost of training /Training Fee, including training manual, MSP and SOP for AI, consumables, slaughter house organs, management of farm, books and other documents	20, 000/ Trainee
2	Hostel fees	3000/ Trainee
3.	Miscellaneous expenditure including management of library, strengthening training centre, water supply, electricity supply etc.	2000/ trainee
4.	Boarding grant for 1 month	₹ 6000/-
	Total	31000/ Trainee

6.2 Placement support for Community resource person/ MAITRIs:

After completion of training AI workers will be established as Community resource person/ MAITRIs under the scheme. Equipments costing ₹ 50,000 per MAITRIs will made available. Item wise cost per trainee is given in the following table:

S. No.	Item	cost /Trainee
1.	Portable 3 lts biological cryocontainer with canisters and goblets	₹ 8000/ AIT
2.	Mother Cryocontainer @ 1 per 5 AI technicians; ₹ 25000/container	₹ 5000 / AIT
3.	AI kit (digital AI gun, straw holding forcep (tweezers), deep stick, straw cutter, thermos flask, digital unbreakable thermometer, Gum Boots, Apron, cap, kit bag, Gun holder, sheath holder, scissors, castrator, trevis etc)	₹ 32000 / AIT
4.	Transport cryocontainer @ 1 per 5 AI technicians ₹ 25000/container	₹ 5000 / AIT
	Total	50,000/ AIT

6.3 Post Placement support to Community resource person/ MAITRIs:

6.3.1 Incentive admissible under Nationwide AI programme will also be made available to Community resource person/ MAITRIs proposed to be established under the project.

6.3.2 Placement: After training Community resource person/ MAITRIs are established as private AI technicians and free to collect cost of goods and services made available to farmers.

7. Fund Flow under the project:

The funds will be released directly to the Implementing Agency to make payment to the PAs on the basis of targets set under the project and achievements made by PA. It will be the responsibility of IA to submit utilization certificate and MPRs to DAHD.

8. Monitoring:

8.1 State Implementing Agency/ Livestock Development Boards will constitute Technical Project Monitoring Committee (TMC) headed by Principal Secretary /Secretary State Animal Husbandry Department. Meeting of TMC will be organized after 3 month.

8.2 State will use Management Information System (MIS) to submit reports viz. Monthly Progress Report (MPR), and Quarterly Progress Report (QPR) to Government of India as per prescribed formats, within the stipulated time frame.

8.3 DAHD will depute its officers for monitoring of the project at State level.

8.4 Monthly progress reports and quarterly progress reports will be obtained from IA

8.5 Account of IAs will be open to monitoring under Rashtriya Gokul Mission

8.6 Third party evaluation of the project by an independent agency

8.7 Activities undertaken by Community resource person/ MAITRIs will also be monitored through use of Pashu Sakhis

9. Evaluation and accreditation of AI training institutes:

AI training institutes with the faculty and facility as per MSP and SOP as prescribed by DAHD will be identified by IA and IA will conduct training immediately after identification.

10. Registration of Community resource person/ MAITRIs with AI service providers

Community resource person/ MAITRIs will be registered and brought under the control of the AI service provider who will monitor performance of the AI worker, ensure maintenance of breeding records and recommend further re-training of the worker if the skills attained are not adequate.

11. Online Monitoring

Data on AI carried out by Community resource person/ MAITRIs will be uploaded on Bharat Pashudhan data base. Performance of Community resource person/ MAITRIs working in the field will be assessed by IAs through Bharat Pashudhan data base.

Appendix-I

Required Standard Facilities at AI Training Institute

1. Class room facilities:

1.1 For a batch of 30 trainees, there should be a class room having minimum of 400 square feet area. If there are more than 30 trainees, there should be an additional class of 400 square feet area.

1.2 A laboratory having minimum 500 square feet area for practical classes is required. This laboratory should have facility to store reproductive organs, keep different models of animals and reproductive organs and space to keep semen and liquid nitrogen storage containers.

1.3 There should be a library and reading room having books and journals on cattle, breeding, indigenous breeds and dairy.

2. Teaching aids

The class room must have the following:

- Adequate chairs and tables for trainees
- White board
- LCD Projector
- Computer
- Charts and Models
- The centre must have the required quantity of semen doses and LN storage containers, AI guns, and required AI accessories.
- Reproductive organs must be obtained from a nearby slaughter house for palpation and passing a gun.
- Ear tags and ear tag applicators
- Measuring tape for estimation of body weight
- ICT aids (Computer, note books or PDAs, printers etc.,

3. Animal housing facilities for practical training

- For practice, the centre should have minimum one animal for six students.

- The centre may have its own animals for practical classes or tie up with nearby Gaushala or Panjarapol or slaughter house for practical training. Every trainee must pass AI gun in at least 20 animals during entire period of class room training.

- If the centre has its own animals, there should be a proper shed, a Trevis /an AI crate and a godown to store feeding material. Animals should be replaced every six months.

4. Lodging and boarding facilities for trainees

- The centre should have proper residential facilities for trainees including kitchen and minimum recreational facilities.

- The AI training Institutes may outsource the board and lodging facilities to an external agency through a formal agreement for at least a period of two years. The copy of the formal agreement should be kept for record for requirement at the time of Accreditation process.

5. Understanding with AI service providing organisations for practical training

- The Centre should have some formal arrangement with AI service providing organisations for its trainees to receive apprenticeship training for 60 days.

- During practical training each trainee should do minimum 75-100 AIs and the same numbers of P.D.s. The AI Centers having such work performance should be selected for apprenticeship training. The trainer of A.I. Technician should have enough experience (3 to 5 years) to impart practical training to trainee A.I. Technicians.

- Trainees should also get opportunities to address farmers meetings to develop confidence and do extension activity effectively.

6. Records/Documents for a AI training Institute

1) Trainees' records of registration

2) Trainees' daily attendance record

3) Records of successfully completed trainees

4) Summary of feedback obtained from trainees

5) Annual progress report / Training Brochure(optional)

Appendix-II

Curriculum and course content for AI technician training

A. Duration of training

1) AI basic training:

- Class room training along with practical training: 30 days
- Practical training in the field with AI service provider: 60 days

2) AI refresher training:

- Classroom and Practical training -- 7 days

B. Admission norms:

1. AI Basic Training:

The participant of this programme should have at least passed in 12th standard examination with not less than 18 years of age.

2. AI Refresher Training:

The participant of this programme should be a practicing AI technician having at least 1 year relevant work experience and should have undergone AI Basic training.

C). Class Room:

1) Different breeds of cows and buffaloes and their production and reproduction parameters

2) Conservation and development of indigenous breeds through selective breeding.

3) Benefits of Crossbreeding and genetic improvement of dairy animals

4) The existing State Breeding Policy and its enforcement.

5) Introduction to AI, and its importance, role of AI in genetic upgradation across nations, Natural Service (NS) vs AI, advantages and limitations.

6) External and internal body parts of a dairy animal and their function

7) Male reproductive organs & their functions

8) Semen, its collection, evaluation, processing, preservation

- different types of semen packing,
- structure of mini and medium straws
- information printed on straw and its importance
- Breed wise Straw colour codes

9) Female reproductive organs & their functions

10) Oestrus cycle:
    - Internal and external symptoms at different stages of oestrus cycle
    - Correct time of insemination
    - Determinants of first AI in heifers
    - Methods of heat detection in cattle and buffaloes

11) Normal reproductive cycle

12) Puberty, Maturity, Breeding, Fertilization, Implantation, Gestation and Calving

13) Ideal calving interval

    - Service period, dry period and Inter-calving period

14) Process of insemination:

    - Collecting History
    - Standard Operating Procedure (SOP)

15) Importance of:

    - Proper method of semen withdrawal from container
    - Proper thawing
    - Proper preparation of AI gun
    - Proper site of semen deposition
    - Care of animal during & after insemination

16) AI equipment and accessories & their care

17) Liquid nitrogen handling:

    - Structure of LN container
    - Handling & care of LN container
    - Precaution in handling of LN
    - Different models of LN containers
    - Importance of maintaining cold chain and LN refilling schedule.
    - Proper LN level in container & its checking. Evaporation rates and refilling interval of commonly used containers in the field under normal working conditions.
    - LN conservation measures

18) Pregnancy Diagnosis

19) Methods of calculating conception rates and factors affecting conception rates

20) Method of drying of animals on completion of 7th month pregnancy.

21) Common reproductive disorders/ diseases, repeat breeding, causes of abortion, etc.

22) Measures to obtain maximum fertility

23) Ear tagging , importance of record keeping, recording formats and submission of records into the Bharat Pashudhan application(offline & online versions) through

24) PDA/Netbook/Desktop (training in data entry with dummy data on test server, different flash messages, saving the data, synchronization of data with the server and using action reports in day to day work.

25) Starting an AI centre

26) Method of non-surgical castration

27) Care and management of new born calf and heifers till it becomes pregnant at farmers perception.

28) Care and management of Dry Pregnant animals

29) Care and management of animals before and after calving, precautions at the time of calving and use of naval kit for disinfection of naval cord

30) Importance of Animal housing and general management in getting full expression of genetic capability

31) Importance of bio-security measures to be adopted during AI.

32) Economically important diseases and their prevention through timely vaccination; various available vaccines; vaccination schedules; importance of maintaining cold chain

33) Basic aspects of nutrition and concept of Ration Balancing

34) Importance of proper nutrition including feeding of vitamins and mineral mixtures and deworming in fertility management with emphasis on the adverse impact of macro and micronutrients deficiencies on fertility status/reproductive health of animal.

35) Vaccination schedule for FMD, HS, BQ, Brucellosis and Anthrax (in Karnataka and Assam)

36) Veterinary first aid

37) Hygiene clean milk production and prevention of mastitis

38) Importance of Animal Insurance; various insurance schemes

39) Various government schemes in the dairy sector: RGM, NPDD.

D. Case Studies

1) Advantages of AI over natural service.

‘

2) Advantages of following SOP for AIT-better conception rate and its impact over a period of five years.

3) Record keeping and using Bharat Pashudhan Portal.

4) Extension activities related to animal husbandry (activities on Breeding, Health and Nutrition).

5) A farmer coming to AI Worker with an animal for insemination with following history of oestrus:

- 3rd day after heat,
- On the day of full moon
- Just on the time of starting of heat
- Animal with pustular/watery/bloody vaginal discharge.
- Gestational heat
- Post partum heat after one month of calving.
- Heifer in heat with lower body weight.

6) Care of young calves till its pregnancy

7) Effect/impact of good AI technician Vs inefficient AI technician

8) Superstitious believes Vs Scientific method of breeding

9) Any new case study relevant to the case study as approved by Principal of the concerned AITI.

E. Audio Visual materials:

1) Animal reproduction and AI

2) Changing lives

3) DO and DONOT of AI

4) Hygienic milk and milk product processing and packagining

5) Year round fodder production

6) Animal health care (Diagnostics for control and eradication of diseases – FMD, HS, PPR, and avian diseases)

7) Improving quality and utilization of poor quality roughages

8) Mineral mixture for increased animal productivity

9) Organic farming for sustainability and profitability

10) Any other material relevant to the course content as approved by the the Principal of the concerned AITI.

F. Practical

1) Identification of different female reproductive organs on morbid Genitalia

2) Palpation of female genitalia in a Phantom box and passing of AI gun

3) Structure of LN container:
   - different models
   - handling & care
   - checking LN level

4) AI equipment & accessories:
   - handling & care including sterilisation

5) Palpation of female genitalia in live animal

6) Passing of AI gun in live animals

7) Demonstration of:
   - proper method for withdrawal of straw from containers
   - proper thawing procedure
   - proper preparation of gun
   - correct site of semen deposition

8) Pregnancy diagnosis at 90 days & beyond

9) Ear tagging

10) Record keeping and Bharat Pashudhan Portal.

G. Study visits

Study visits to any of the following places within/outside the State as deemed appropriate, by the AI training Institutes:

- AI Centre
- Cattle Feed Factory(optional)
- Dairy Farm
- Exhibitions and Krishimela/ Pashumela (optional)
- Semen Station
- Dairy processing plant
- Fodder farm/Demonstration farms

H. Faculty profile and requirement (for a batch size of 30 trainees)

1. Veterinary Officers:

Minimum two Veterinarians are required with educational qualification of BVSc & AH and 3 years of work experience in AI, Breeding, Health and Management of Cows and Buffaloes along with experience in providing on the job practical training and delivery of lectures.

2. Support Staff:

Minimum one support staff is required with graduation in any discipline

I. Tests during Training:

Class Room Training:

- Fortnightly written test on topics covered.
- Final written test at the end.
- Final practical test to evaluate the skills learnt

J. Pass marks:

- Minimum three theoretical tests and one practical test may be conducted.
- Minimum 50% in each of the test including the final tests.4

Annexure-VI

ARTIFICIAL INSEMINATION PROGRAMME/ NATIONWIDE AI PROGRAMME

1. Objectives

The programme will be implemented with the following objectives.

a) Delivery of quality artificial insemination services at farmers doorstep in districts with less than 50% A.I coverage.

b) Enhancement in milk production and productivity of bovines thereby increasing farmers income.

c) Better acceptability of artificial insemination services among farmers through implementation of organized farmers awareness programme

2. Area of Operation and Duration of Project:

2.1 The component will be implemented in 607 identified districts having less than 50% A.I coverage from 2021-22 to 2025-26 over a period of 5 years covering around 300 lakh breedable bovine females annually.

2.2 Saturation of the selected village will be ensured by covering all available breedable bovines through Artificial insemination under the programme. Artificial insemination services will be made available free of cost at farmers doorstep under the programme

2.3 District should ensure that all the breedable bovines available in the selected villages are covered completely under the programme. Short listing of villages shall be done based on the breedable bovine population of the villages as per the 20th Livestock Census.

2.4 In case of Hilly States, North Eastern States and Union Territories (Himachal Pradesh, Uttarakhand, Union Territories of Jammu and Kashmir and Ladakh), the programme will be extended to all villages and to all districts.

2.5 The selection of districts will be based on the A.I Coverage data made available by the States. All breeds of cattle and buffaloes will be covered under this programme. Monitoring of the project and follow-up of all the animals covered under the programme shall be continued till calves born.

3. District Development Coordination and Monitoring Committee (DISHA)

For better implementation of the scheme, the scheme shall also be included under District Development Coordination and Monitoring Committee (DISHA).

4. Funding Pattern:

The component will be implemented on 100 % grant in aid basis.

5. Implementing Agencies:

5.1 The programme will implemented by Implementing Agencies (IAs) such as State Livestock Development Boards, Milk Federation, NDDB etc.

6. Action Plan:

6.1 All available eligible breedable bovines will be covered through artificial insemination.

6.2 Participating farmers' low producing Indigenous cows should be upgraded with the semen of High yielding Indigenous Breed bull (selective breeding) with the Minimum Standards (MS) of above 3000 Kgs. Non-descript cows either may be upgraded with the semen of high yielding Indigenous breed (grading up) meeting above mentioned defined minimum standards or using semen of exotic breeds (Cross breeding) with minimum lactation yield above 10000 kg in case of HF and 7,000 kg in case of Jersey. Crossbred cows may be upgraded with the use of semen of high yielding crossbred bulls (interse mating) with dams lactation yield in case of CBHF of above 6000 kg and in case of Jersey dams lactation yield above 4000 kg as per the State breeding policy. Further, indiscriminate cross breeding shall be avoided by adhering to the notified State breeding policy.

6.3 Non descript buffaloes should be upgraded with the semen of high yielding buffalo bulls like Murrah/Nili Ravi/ Mehsana/Jaffarabadi with minimum lactation yield above 3000 kgs as per the State breeding policy and descript buffaloes may be upgraded through selective breeding using HGM bulls of the particular breed.

6.4 In villages where co-operative societies are available, A.I shall preferably be done through Dairy Cooperative Societies (DCS)/ through cluster AI centres of dairy co-operatives.

6.5 Though 2.5 A.I's are allowed per animal, in case of animals conceived with a single/ double AI, the rest of the semen doses shall be used for additional animals (Cattle and Buffalo).

Procurement of Breeding Inputs:

6.6 The semen doses for the programme shall be procured by the concerned State Implementing Agency as per the Standards and specifications in the form of Minimum Standard Protocols (MSPs)/ Standard Operating Procedure (SOPs) formulated by Government of India.

6.7 **Standards for Selecting Semen:** High Yielding Indigenous breed (HYIB) semen to

be used should meet the standards and specifications prescribed in MSP for semen production and dams lactation yield should not be below 3000 Kgs/lactation. For semen of HF and Jersey, MSP shall be of 10,000 Kgs for HF and 7000 Kgs for Jersey respectively. For Buffaloes, in case of non- descript buffaloes, semen of Murrah/ Nili-Ravi with MSP of 3000 Kgs and above may be used, as it is easily available. For descript buffaloes, minimum MSP as decided by Government of India should be used. All purchases of semen should be from the 'A' graded Semen Stations accredited by Central Monitoring Unit (CMU) only.

6.8 **Sire Directory or Details of Bulls whose Semen is used for A.I** – Concerned IA shall make relevant available copies of sire directory in regional languages to the A.I technician giving details of Bull identification number, Dam's lactation yield/ Breeding value, fat % including the photograph of the used bull. The A.I technician shall make this information available to the farmer and after performing A.I, the empty straw shall also be made available to the farmer, who can check it through Sire Directory available on dahd.nic.in

Artificial Insemination by AI technician:

6.9 Trainers' trainings on data uploading on Bharat Pashudhan data base have already been completed in the States.

6.10 A.I technicians village wise shall be ear marked by the District Coordination team and their name and mobile number shall be made public for use of farmers.

6.11 The AI technician shall perform AI following SOPs formulated by Government of India. Copy of Standard Operating Procedure (SOP) for AI shall be made available to AI technicians.

Tagging:

6.12 All the animals covered under the programme shall be identified using AUID and their data shall be uploaded on Bharat Pashudhan data base. After AI, the animal shall be followed up for pregnancy diagnosis till calf born and all the events shall be recorded by the AI technician on the data base.

Parentage Testing:

6.13 Parentage testing shall be done @ 100 calves/district for of the calves born under NAIP @ testing cost of ₹ 3400/- (testing has to be done for both dam and calf @ ₹ 1700/- as testing fee for each sample of dam and calf).

Farmer Awareness:

6.14 At village level: Display board should be placed in every selected village indicating that all the eligible female bovines (cattle and Buffalo) in the village are covered under NAIP through free AI service at farmers doorstep.

6.15 Banners should be displayed in prominent places and also at sites where A.I is done. Village wise details of AI technicians shall be shared by State and same detail will be displayed in each village through wall paintings, posters etc.

6.16 Village wise details of AI technicians shall be shared by State and same detail will be displayed in each village through wall paintings, posters etc.

6.17 **At district level:** A fund of ₹ 5 Lakhs per district has been made available for publicity at village and district level (wall writings, banners), storage and transportation of semen doses, AI consumables and monitoring. Leaflets in regional language should be prepared by the concerned DVO on the following and to be distributed compulsorily to all the farmers for creating awareness.

- Benefits of A.I over natural service
- **Detection of heat**
- Regarding the information printed on the semen straw -bull No., Breed, MSP etc
- Advantages of high yielding semen for enhancing the productivity.
- Management of cryo containers and liquid nitrogen
- Expected date of pregnancy diagnosis
- **Creating awareness among farmers to ask for the empty straw from the AI technicians after AI is performed, to know about the details of semen used for A.I and about the bulls.**

6.18 **Public Participation:** Member of Parliament along with Member of Legislative assembly shall be invited for the inauguration programme. The programme shall be organised to create wide publicity in a simple manner.

6.19 **At State level:** For creating awareness about the programme at State level, ₹ 5.00 lakh has been made available for printing of A.I formats, preparing and broadcasting of Radio jingles on the importance of A.I, organising awareness camps and Publicity through Television.

7. Monitoring of the Programme:

7.1.1 District level: At the district level, scheme shall be monitored by the District Monitoring committee headed by Collector/District Magistrate, Member secretary –

DAHO and the Implementing agency, which will hold weekly review meetings ascertaining the progress of the programme, with special reference to AI technicians in the selected villages and the media campaign launched in local language to make the farmers aware of the programme.

7.1.2 State level: State Animal Husbandry Department shall constitute a State Monitoring Committee headed by the Principal Secretary of the department and its members should be Stake holders involved in AI. In each State, a nodal officer shall be nominated by the State for coordination with the centre. The State Monitoring Committee will meet weekly during the campaign. The State government may change the administrative arrangement of review but will ensure that the weekly review takes place at a level above District Animal Husbandry Officer/District Veterinary Officer and the minutes are shared with the District Collector and the Secretary In charge of Animal husbandry Department in the State.

7.2 DAHD shall depute its officers for monitoring of the programme at State level.

8. Incentive Package for AI technicians:

8.1 All Incentives shall be transferred through PFMS by the State to AI technicians as per the guidelines issued by GoI.

8.2 Incentive will be made available to the private AI technician/MAITRIs @₹ 50/ per AI and ₹100/- per calf born. All incentives for private A.I technicians/ MAITRIs to be disbursed strictly based on the data uploaded on Bharat Pashudhan and verification of the data by the concerned District Animal Husbandry Officer (DAHO). No incentives shall be paid to government AI technicians or technicians drawing salary from Milk Federations engaged in the programme.

8.3 In case of North Eastern States and Hilly States/Union Territories (Himachal Pradesh, Uttarakhand, Union Territories of Jammu and Kashmir and Ladakh), the incentive for private A.I technicians (Not getting salary by Government or Co-operatives) shall be @ ₹100/- per A.I. and ₹100 per calf born.

9. Measures to Ensure Quality of Goods and Services

Standards and specifications in the form of MSP's/SOP’s formulated by Government of India shall be implemented in letter and spirit.

Annexure-VII

PROMOTION OF SEX SORTED SEMEN

1. Introduction

1.1 With mechanisation of Agriculture, utility of male bovines have been reduced. Farmers are not willing to maintain Bullocks for agriculture or any other draft work. Hence, male calves born at farmer house have become a liability. Farmers often let the male calves loose which are resulting into increase in stray animal population. Only female calves can be produced (with more than 90% accuracy) by use of latest technology like Sex Sorted Semen in AI program. Use of sex sorted semen will be game changer for the farmers as only female calves are produced with 90% accuracy against 50:50 male to female sex ratio with normal semen.

1.2 Extensive use will increase the number of female animals thereby increasing income of farmers through sale of female or through sale of milk. Use of sex sorted semen will also reduce male cattle population thereby limiting stray cattle population in the country.

2. Objectives:

2.1 To promote use of sex sorted semen for production of female calves with 90% accuracy
2.2 To enhancing milk production and farmers income through production of female calves.
2.3 Increased availability of female calves of high genetic makeup for farmers and entrepreneurs interested in taking up dairy farming.
2.4 To make sex sorted semen technology affordable to farmers thereby increasing acceptability of artificial insemination with use of sex sorted semen.
2.5 To Create Visible demand of sex sorted semen in the country thereby attracting private entrepreneurs in production of sex sorted semen.

3. Action Plan:

Quality parameters of sex sorted semen

3.1 Semen production facility will supply sex sorted semen with 90% sex accuracy for birth of female calves.

3.2 Semen production facility will be allowed to supply only semen obtained from high genetic merit bulls.

3.2.1 For exotic bulls: Bulls shall be progeny tested/ genomic tested with positive EBV/GEBV and dams lactation yield (ME) shall be above 10,000 kg in case of HF bulls and 7,000 kg in case of Jersey bulls

3.2.2 For indigenous bulls (Gir, Sahiwal, Red Sindhi and Tharparkar): Bulls shall be progeny tested/ genomic tested with dams lactation yield shall be above 3500 kg.

3.2.3 For CB bulls shall be progeny tested / genomic tested and dams lactation yield shall be above 5000 kg in case CBHF and above 3500 kg in case of CB Jersey

3.2.4 For buffalo bulls: Bulls shall be progeny tested/genomic tested with positive EBV/ GEBV in case of Murrah, and Mehsana and dams lactation yield shall be above 3500 kgs. In case of Nili Ravi and Jaffarabadi dams lactation yield shall be above 3500 kgs.

3.3 Sperm concentration in sorted semen straws shall not be less than 2.1 million and post thaw motility shall not be less than 50% (with at least 1.3 million progressively motile sperms/ straw).

3.4 Semen straws shall be produced as per MSP and SOPs formulated by the DAHD and semen production facility shall be graded as A by Central Monitoring Unit (CMU) of DAHD.

AI technicians

3.5 IA shall select best AI technicians operating in the area for attaining higher conception rates.

3.6 IA will organize training or orientation programme for selected AI technicians by involving experts of sex sorted semen production facility for higher conception of rates.

3.7 AI technicians participating in implementation of the programme shall be registered with Implementing Agency and their profiles shall be uploaded on Bharat Pashudhan data base.

3.8 Details of AI technicians engaged in implementation of the programme shall be made available to DAHO and local veterinary hospital for effective monitoring of the project activities.

3.9 AI technicians engaged in implementation of the programme will be supplied with sex sorted semen with unique number on each straw.

3.10 Inventory of the sex sorted semen straws supplied to AI technician will be maintained by IA along with batch number, unique number and number of doses supplied.

Incentives to AI technicians

3.11 Provision of incentives to private AI technicians will be as made available under NAIP programme.

3.12 Incentives will be made available on the basis of verification of the data uploaded by AI technicians on Bharat Pashudhan data base.

Selection of Beneficiaries:

3.13 Scheme will be available to all the farmers interested in taking up AI with sex sorted semen.

3.14 Heifers and normal cyclic cows in 1st to 3rd lactation available with the farmers may be selected and covered under the programme through sex sorted semen. Animals above 3rd

lactation may not be covered under the programme as in this category of animals conception rate is substantially low.

Parentage testing
At least 1% of the calves born under the programme will be taken up for parentage testing by implementing agency on random basis. Parentage testing will be arranged by NDDB.

4. Implementation Mechanism

Area of Operation

4.1 Project will be implemented in all States and UTs

4.2 AI technician shall deliver Artificial insemination service at the farmer's doorstep following MSP and SOP prescribed by experts of sex sorted semen production facility.

4.3 In any case female to male calves' ratio shall not be less than 90:10. If male calves ratio is exceeding in that case IA will not further purchase sex sorted semen doses from concerned sex sorted semen production facility and return all the doses supplied by the concerned facility available under storage with IA.

4.4 All the information that is starting from registration of animal to calving, ear tagging of calf and parentage verification shall be entered by AI technicians on Bharat Pashudhan system.

4.5 Parentage verification of randomly selected female calves born from sorted semen will be arranged by NDDB. In any case parentage testing error shall not exceed 10%. If parentage testing error exceeds 10% in that case IA may remove AI technician from the area.

5. Implementing Agency:

5.1 The component promotion of sex sorted semen will be implemented through Implementing Agencies (State Livestock Development Board/ State Department of Animal Husbandry/State Milk Federation (Milk Union)/ NDDB (NDS). Funds will be released directly to implementing agencies.

5.2 The Implementing Agency will either implement the programme through Service Provider or through own breeding network.

5.3 The sanctioned projects under RGM for establishment of sex sorted semen production which have created the facility for sex sorted semen production will be allowed to produce sex sorted semen and may implement the project as proposed in the document. Other sanctioned project which have not created facility or in tendering stages will implement the project in the manner as proposed in this document.

6. Monitoring of the project:

6.1 NDDB

Project will be monitored by National Dairy Development Board and funds are proposed under the project for monitoring of the project activities and Parentage verification.

NDDB will be responsible for the following:

- Designing system of Monthly reporting.
- Training
- Ensuring parentage verification as per guidelines of the scheme
- Organizing review meetings with IAs
- Periodic Field visits and random checking of information reported in Bharat Pashudhan Portal with respect to field reality
- Periodic submission of Monitoring visit and progress reports to DAHD
- Evaluation of Projects
- Any other responsibility which arises while implementation of the programme.

6.2 Online Monitoring of the project:

- For online monitoring all the activities of the project including identification of animals covered under the programme using AUID, AI using sex sorted semen, pregnancy diagnosis (after 90 days), birth of the calf, identification of claves using AUID will be uploaded on Bharat Pashudhan data base by AI technicians. Incentives to AI technicians will be made available on the data uploaded on the Bharat Pashudhan data base.
- Verification of information entered by AI technician on the Bharat Pashudhan data base by local veterinarian/ DAHO on daily basis.
- Verification of information uploaded on Bharat Pashudhan data base by NDDB at regular interval.

6.3 Close Monitoring of the Project

- All the activities Project will be monitored by National Dairy Development Board as Nodal Monitoring Agency.
- DAH/ Milk Federation (Milk Unions)/ NDDB (NDS) will monitor all the activities of the project through its field level institutions dairy cooperative societies/ Veterinary Hospital/ Veterinary Dispensaries.
- A Help established under NRLM will be roped in for monitoring of the project at beneficiary level and creation of awareness among the farmers.

Further, State Level Review Committee meeting will be held every quarter under the Principal Secretary (Dairy Development/Animal Husbandry & Dairy Development) of the concerned State to review progress of project. MD of Milk Federation, CEO of LDB, Director (Animal Husbandry), and breeding experts of State veterinary University will be its members. Additional Secretary, DAHD or his representative will attend meeting once in every six months. Monthly progress report will be prepared by Implementing Agencies and same will be reviewed by NDDB. All the activities related to implementation of the project shall be noted and submitted to State Dairy Development/Animal Husbandry & Dairy Development Department.

ANNEXURE-VIII

ESTABLISHMENT OF HEIFER REARING CENTRE (HRC) SCHEME

1. Introduction

1.1 The HRCs will be established and managed by milk unions/ milk federations/ milk producer companies/ Self Help Groups in the dairy sector/ State Livestock Development Boards. The centres will procure good quality disease free heifers from the milk pockets or breeding tracts.

1.2 Efforts will be made by Implementing agencies to procure heifers from the breeding tracts/ born through IVF with minimum genetic merit:

a. dams' lactation yield above 2500 kgs in case of indigenous cattle breedsGir, Sahiwal, Red Sindhi, Rathi, Kankrej, Tharparkar etc.
b. dams' lactation yield above 3000 kg in buffalo breeds Murrah, Jaffarabadi, Mehsana, Nili Ravi etc. and
c. dams' lactation yield above 4000 kgs in HFCB and 3000 in JYCB.

1.3 Heifers inducted at HRCs will be reared by the centre till maturity and impregnated with HGM SSS+IVF embryos. Oocytes obtained from elitist of elite donors and fertilized with semen of top 5% of the bulls available in the country will only be used under the programme. Heifer rearing centres may take services of service provider for establishing IVF pregnancy or may take help of IVF labs established under Rashtriya Gokul Mission.

1.4 Under the project facility will created for housing at least 500 heifers per centre and alsofacilities for fodder cultivation, silage making and fodder block making etc. Surplus fodder/ fodder blocks/ silage will be made available to farmers by implementing agencies at reasonable price.

1.5 All the animals available at HRC will be tested against diseases at regular interval as perthe disease testing protocol prescribed by Government of India.

1.6 HRC will be allowed sell disease free pregnant heifers to farmers/ interested entrepreneurs at market price or milk union may induct high yielding animals in their milk procurement area and recover cost of inducted animals from farmers for improving viability of the centre. HRC will also be used as farmer training school for training of farmers in scientific rearing of animals, preparation of balanced rations from locally available feed ingredients and in other aspects of animal management. For creating rearing infrastructure and for procurement of heifer's 35% assistance will be made available to the participating Implementing Agency.

1.7 Implementing agency will be allowed to arrange balance funds from its own resources or may take loan from financial institutionsincluding NCDC.

1.8 It is proposed to give one-time assistance as above to heifer rearing centres and further heifer rearing centres will work on self-sustainable basis through recovery of sale price ofpregnant heifers. It is proposed to establish 30 heifer rearing centres.

1.9 Heifer rearing centres established under the scheme will be assisted in tying up with IVF facilities.

2. Financial implication

One-time assistance will be made available to the implementing agencies forinduction of 15,000 heifers at the rate 500 heifer per heifer rearing centre and also forcreation of housing facility for 15000 heifers at the rate 500 heifers per heifer rearingcentre. Cost of creation of housing facility of heifers has been taken as Rs 1 lakh/ heifer Component wise requirement of funds is depicted in the following table

S. No,	Component	Target	Unit cost in ₹	Total Project Cost	Assistance	Funds required under the project
1.	Establishment of housing facility; and other civil works	30 heifer rearing centres with capacity to rear 15000 heifers	1 lakh / heifer	150 cr	35% assistance	52.50
2	Induction of heifers	15000 heifers	30,000	45 cr	35% assistance	15.75
3.	Corpus fund	30 centre	200 lakh/ centre	-	-	-
4.	Automation of heifer rearing centre	30 centre	20 lakh/ centre	-	-	-
	Total			195 cr		68.25

3.Implementing Agencies

3.1 The project will be implemented through milk federations/ milk unions/ Milk Producers Company. Interested State Livestock Development Boards may also participate under the project and establish heifer rearing facilities at State cattle breeding farms.

4. Impact of the programme

(i) With the implementation of programme 15 lakh tonnes of additional milk will be produced of the value of ₹ 64,500 crore and milch animals of the worth of ₹ 2900 crores assuming that 2.9 lakh milch animals added to the national milch herd and assuming that each pregnant heifer will have capacity to produce additional 1500 kg of milk in lactation and female calf born out of pregnant heifers will have capacity to produce 3000 kgs of additional milk in lactation. With investment of ₹ 1090 crores additional ₹ 67,400 crore will be added tothe rural economy after 5 years of the implementation of the project or with investment of ₹ 1 return to the farmer is ₹ 62.

(ii) Implementation of the project will increase farmer's income by ₹ 64,500 per lactation during 1st year of implementation of the project and by ₹ 1,29000 per year after 3 years of implementation of the project.

(iii) Disease free high yielding pregnant heifers will be available to farmers at their doorstep.

(iv) Genetic gain in bovine population will be increased to 25% per annum against 5% at present.

(v) This policy will give new dimension to development and conservation of low producing indigenous bovine breeds.

(vi) Policy will increase the rate of propagation of elite animals in the country. This policy is need of the hour and required to be implemented throughout the country.

(vii) This will also solve major constraint being faced by the country for identification of elite donors as calves born out of IVF pregnancy will act as future donors. About 1.80 lakh elite donors will be available for further propagation in the country.

ANNEXURE-IX

INTEREST SUBVENTION ON INDUCTION OF DAIRY ANIMALS

1. INTRODUCTION

1.1 To encourage farmers to purchase High genetic merit (HGM) IVF heifers, either from Heifer rearing centers, or from the Breed Multiplication farms already set up under RGM, it is proposed to provide 3% interest subvention on loan taken by the farmer from Milk Unions/ financial Institutions/ banks for such purchase.

1.2 Interest subvention will be made available on animals produced using IVF technology at heifer rearing centres/ breed multiplication farms.

1.3 If male calf born under the programme qualify standards and specifications as prescribed under MSP for semen production, the male calf may be purchased by LDB/ semen stations for semen production.

2. AREA OF OPERATION

The scheme will be implemented in all States and Union Territories.

3. OBJECTIVES

a) To encourage farmers to purchase High genetic merit (HGM) IVF heifers
b) To promote modern reproductive technologies in the country
c) To increase availability of high genetic merit animals in the country
d) To encourage farmers for undertaking cattle and buffalo breeding

4. IMPLEMENTING AGENCY

4.1 The interest subvention component of RGM will be implemented by the Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying through SIDBI/ NABARD.

5. Eligible entities

(i) All farmers across the country engaged in dairying/ interested in dairying are eligible for obtaining support upto 6 heifers/ farmer under the component of 3% interest subvention on procurement of HGM animal born through IVF technology.

6. INTEREST SUBVENTION AND LENDING RATE OF INTEREST

6.1 **Interest subvention:** 3% for all Eligible Entities (EE)

6.2 **Lending Rate of Interest: T**he rate of interest to be fixed by scheduled banks/ lending institutions such as NCDC, NBFCs etc should not exceed at 200 basis points plus External Bench Mark Based Lending Rate (EBLR) for the Eligible Entities.

6.3 The Department of Animal Husbandry and Dairying will directly pay the interest subvention to the Scheduled Bank. Initially the Department will pay interest subvention amount in advance upfront to the lending bank for the first year based on the request of Scheduled Bank. Interest subvention from the 2nd year onwards would be released based on the non- NPA beneficiries entitlement claimed by the Scheduled banks/ lending institutions such as NCDC, NBFCs etc every year in advance.

6.4 The Eligible Entities (beneficiaries) will not be able to get the interest subvention, if the beneficiary is defaulter of re-payment of loan amount in any given year.

6. REPAYMENT:

6.5 Maximum repayment Period: 5 years inclusive of moratorium of 2 years on principal amount.

6.6 However, the Financing Bank, at their discretion, may curtail the repayment period depending on the repayment capacity of the beneficiaries (EEs) etc.

6.7 Subject to provisions of RGM, Scheduled Bank will fix the lending rates in consonance with broad regulatory guidelines of RBI taking into account their cost of funds and the risk perception of the loan.

6.8 Beneficiary will be considered as non-eligible for assistance under the component if no drawls is made by the beneficiary within six months from the date of sanction by the Scheduled Bank, This is a broad guidelines, however, the lending bank may take final decision on case to case basis.

6.9 Beneficiary will be allowed to withdraw his application on account of genuine constraints and difficulties as per the Bank's terms of reference in this regard.

6.10 DAHD will have authority for recall of interest subvention along with interest (10% per annum) within 30 days after a notice is given under following circumstances:

- If elite animals are not procured by the beneficiary within 1 year of sanction of interest subvention by DAHD.
- If the assisted beneficiary stops rearing of elite animals within seven (5) years from the date of purchase of elite animals under the scheme.
- If during such period, it comes to the notice of the DAHD that interest subvention has been availed by manipulating / concealment of information / facts or that the interest subvention has been utilized for purposes other than those for which it was sanctioned.

7. Dovetailing of Assistance

7.1 Considering the complexities and challenges associated with the component of this nature, the EEs may dovetail assistance available under various other schemes of Central and State Governments. While dovetailing such assistance, it will be ensured that there is no duplication of assistance for the same component.

8. EVALUATION AND SANCTION

8.1 The PMA set up in the Department of Animal Husbandry and Dairying shall scrutinize the application, evaluate, and appraise the proposal sanctioned by the Scheduled banks/ lending institutions such as NCDC, NBFCs etc for approval of interest subvention under RGM by National Steering Committee.

8.2 The NSC will meet regularly and consider the proposals placed before it and accord approval to for grant of interest subvention.

8.3 The Bank shall send a copy of loan sanction letter of the applicants to DAHD prior to such applications being considered for interest subvention under RGM.

9. AWARENESS GENERATION

9.1 There are various stake holders who may assist farmers in availing interest subvention. These stake holders need to be aware of the scheme adequately so that they can motivate farmers in availing interest subvention. Therefore, the DAHD will use Electronic, Print and Social Media to create public awareness.

9.2 The Stake Holders' like DAHD/ NDDB/ Dairy Federations / Milk Unions / Livestock Development Boards/ KVKs etc will be assisted under the project for creating awareness among the farmers.

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