सत्यमेव जयते

OPERATIONAL GUIDELINES FOR IMPLEMENTATION OF RASHTRIYA GOKUL MISSION

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OPERATIONAL GUIDELINES FOR IMPLEMENTATION OF RASHTRIYA GOKUL MISSION (2021-2026)
SALIENT FEATURES

1. Introduction

The Rashtriya Gokul Mission (RGM) is being implemented for development and conservation of indigenous bovine breeds since December 2014. 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 scheme is proposed to be continued under umbrella scheme Rashtriya Pashudhan Vikas Yojna. The 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) To enhance productivity of bovines and increasing milk production in a sustainable manner using advance technologies

b) To propagate use of high genetic merit bulls for breeding purposes.

c) To enhance Artificial insemination coverage through strengthening breeding network and delivery of Artificial insemination services at farmers doorstep

d) To promote indigenous cattle & buffalo rearing and conservation in a scientific and holistic manner.

3. Funding Pattern

All the components of Scheme will be implemented on 100% grant-in-aid basis except the components of: i) accelerated breed improvement programme under the component subsidy of Rs 5000 per IVF pregnancy will be made available to participating farmers as GoI share; ii) promoting sex sorted semen under the component subsidy upto 50% of the cost of sex sorted semen will be made available to participating farmers and iii) establishment of breed multiplication farm under the component subsidy upto 50% of the capital cost of the project will be made available to entrepreneur.

3. Duration of the Project:

3.1 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:** 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# / Central Frozen Semen Production and Training Institute , Central Cattle Breeding Farms ,Central Herd Registration Scheme , National Dairy Development Board/Indian Council of Agricultural Research ICAR and its Institutes / Central Universities
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

6.1 Under Rashtriya Gokul Mission (RGM) funds will be released directly to Implementing Agencies (IAs).

6.2 All Implementing Agencies will implement PFMS for making expenditure under the scheme and implement EAT module of PFMS.

6.3 Implementing Agencies will submit utilization certificate as per format prescribed in GFR 2017 through the concerned State Government. UC shall be duly countersigned by the State Government. NDDB/ICAR Institutes shall submit UC as per the prescribed format at the end of the financial year. All the agencies will refund interest accrued out ‘of the funds released by Government of India through NTRP portal of Bharat Kosh.

6.4 Participating Agencies (PAs) will submit proposal to IAs for assistance under the scheme. The IAs will channelize funds to the PAs for implementation of the project.

7. Fund Flow Mechanism under RGM

7.1 **Implementing Agency (IA) of the Project**:

(i) Funds will be released directly to IAs Bank Account registered with PFMS.
(ii) IAs shall open project wise bank account for effective monitoring of the project.
(iii) IAs shall map all the account of vendor on PFMS for making payment under the scheme.
(iv) IAs shall use EAT module of PFMS and update information on PFMS on daily basis.
(v) IAs shall not be allowed to divert funds to FD/Flexi Account/Multi option Deposit Account/Corporate Liquid Term Deposit Account
(vi) Interest earned shall be depicted separately on PFMS and remitted mandatorily after end of each of every financial year through NTRP portal of Bharat Kosh.
(vii) State share released by the State Government under the earlier components (sex sorted semen) shall be depicted on PFMS.
(viii) UTs without legislature shall work directly on PFMS.
(ix) IA shall submit Utilization certificate as per format after end of each of every financial year through the State Government. IAs such as NDDB, Central Universities, CCBFs, CFSP&TI and ICAR institutes shall submit UC directly to DAHD. Utilization Certificate shall be uploaded on PFMS and immediately.
(x) During the further release of funds balance amount of funds available in the account of IA will be considered.
(xi) No funds will be released to IA if UC is not uploaded on PFMS and utilization information is not updated on EAT module of PFMS.

7.2 **Participating Agency**

(i) PA shall open zero balance account and same shall be linked with PFMS by IA.
(ii) IA shall transfer funds in the zero balance account maintained by PA.
(iii) PA shall map all the account of beneficiaries/ vendor on PFMS for making payment under the scheme. No payment shall be made through DD/ Cheques
(iv) PA shall maintain saving bank account and not allowed to maintain current bank account.
(v) PA shall refund interest accrued out of the funds released to IA after end of each of every financial year.
(vi) PA shall not be allowed to divert funds to FD/Flexi Account/Multi option Deposit Account/Corporate Liquid Term Deposit Account
(vii) IAs shall monitor implementation of the project at the level of PA on monthly basis
(viii) PA shall use EAT module of PFMS during utilization of funds and update information on PFMS on daily basis.

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

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

8.2 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 & Cooperation & Farmers Welfare, Department of Biotechnology etc.

9. Central Level Implementation Mechanism

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

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

PSC 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. The PSC 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 PSC, component structure, cost of components and re-appropriation proposals. PSC will be fully empowered to make changes and delegate powers necessary for smooth implementation of the programme.

9.2 **Central Monitoring Units (CMU)** of experts already constituted by the Department for development Minimum of Standard Protocols (MSP) and Standard Operating Procedures and implementation of the MSP and SOPs in the country will continue its activities during 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.

9.3 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.

9.4 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.

9.5 **Call Centre:** Close monitoring of the project will also be done through call centre and cost of the call centre will be borne from National Animal Disease Control Programme.

10. State Level Implementation Mechanism

10.1 State/UT Level RGM Review Committee meeting shall be held every month under the 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. Joint Secretary, DAHD or his repetitive should attend the meeting once every quarter.

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

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

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

11. **State Ranking**

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 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 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.

12. **Social capital usage for implementation, extension and Monitoring**

12.1 Panchayti Raj Institutions (PRIs) will be integrated for monitoring of the scheme at the village level specially NAIP, Sex Sorted semen, IVF technology, MAITRIs etc. List of farmers availed services under the scheme will also be made available to PRIs

12.2 Pashu Sakhis established under DAYNRLM will be used for conducting awareness campaign in the villages. Eligible Pashu Sakhis will also be given basic

training in AI and established as MAITRIs. Pashu Sakhis will also be used in monitoring of activities under taken by AI technicians and services made available to farmers at village level.

12.3 ICAR Research Institutes will be integrated for undertaking research development activities required for implementation of the scheme.

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

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

13. Components

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

13.1 Availability of High genetic Merit Germplasm:

13.1.1 Bull Production Programme

13.1.1.1 Progeny Testing: Milk production is a sex limited trait therefore genetic potential of the bull is estimated by the 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-I**

13.1.1.2 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 establishment of Central herd Registration Scheme will be deployed for monitoring and implementation of pedigree selection programme. Detailed guidelines given at **Annexure-II.**

13.1.1.3 Genomic Selection: Multi-breed genomic chip developed 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 development and validation of genomic chip NDDB and NBAGR will be assisted. Provision of funds under the component will also be for committed liabilities of ongoing National Bovine Genomic Centre for Indigenous Breeds (NBGCIB) project. It will be mandatory for all the semen stations to take up genomic testing of all the bulls available to semen station.

13.1.1.4 **Import of Germplasm:** 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. Funds under the component will be released directly NDDB for implementation of the project.

13.1.2 Support to semen stations

13.1.2 .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 SSMS and Information Network for Semen Production and Resource Management (INSPRM). 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-III.** 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 sale semen doses for use in breeding programme in the country.

13.1.3 Implementation of IVF technology:

13.1.3.1 **IVF labs:** Committed liabilities of 30 IVF labs and centre of excellence sanctioned under RGM will be completed during RGM 21-26. All the labs practicing ETT will be converted into IVF lab by 2021-22. All labs will be accredited and evaluated by Central Monitoring Unit.

13.1.3.2 Implementation of In Vitro Embryo Production Technology: IVF technology will be promoted at 7 CCBF for production of high genetic merit bulls. Unsexed semen will be used to produce bulls from donors above MSP. Private agency will be identified to produce HGM bulls at CCBFs. Male calves produced using IVF technology from the donors above MSP available with farmers meeting disease testing protocols will also be procured for use in semen production. HGM bulls produced will be distributed through bull distribution committee as stated above. Other labs sanctioned under the RGM will be allowed to develop revenue sharing model for getting assured pregnancy through IVF technology.

13.1.3.3 Implementation of IVF technology for getting assured pregnancy: For rapid genetic upgradation in the country IVF technology will be used for getting assured pregnancy in the recipients maintained by farmers interested in taking technology for production of elite animals. Component will be implemented through NDDB throughout the country. Subsidy will be made available to participating farmers and calves produced under the programme will be subjected to parentage testing. Component will be implemented through NDDB. Detailed guidelines for implementation of the project is given at **Annexure-IV**

13.1.4 Breed Multiplication Farms:

Breed Multiplication Farms Entrepreneurship model will be developed for establishment of breed multiplication farms for making available high genetic merit heifers (HGM) to farmers to fulfill the need of general shortage of such animals. It is proposed to make available 50% capital subsidy to interested entrepreneur for construction of cattle sheds, equipment, procurement of elite bull mothers etc. The entrepreneur will establish breed multiplication farm (BMF) and produce elite heifers using sex sorted semen or IVF technology. Disease free heifers produced at the BMF will be sold to interested farmers. HGM bulls born at BMF will be procured by semen stations for semen production. Breed Multiplication Farm will also act as the training centre to conduct training for farmers and entrepreneurs. For establishment of BMF entrepreneur will obtain loan from financial institutions and subsidy will be routed through NDDB. Component will be implemented through NDDB as Implementing Agency. **Detailed guidelines are at ANNEXURE-V**

13.2 Extension of AI coverage

13.2.1 Establishment of Multi-Purpose AI technicians in Rural India (MAITRIs): Against the requirement of 2,02,469 AI technicians 1,16,586 AI technicians are available in the country. Thus additional 90,958 AI technicians will be required for extension of AI coverage from 30% to 70%. Under the scheme it is proposed to establish 40,000 MAITRI centers over five year period. Funds under the component would be made available for: i) procurement of equipment and ii) training of MAITRIs. Efforts will be made to augment resources for training of MAITRIs from PMKVY/DDKV scheme and using existing veterinary colleges for imparting quality training to MAITRIs. Detailed Guidelines are given at **Annexure- VI.**

13.2.2 Nationwide AI programme: Under the component it is proposed to cover 30 million animals annually through artificial insemination. This will lead to increase AI coverage from present level of 30% 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 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 MAITRIs / private AI technicians for performing AI using HGM bull semen and after that incentive will be made available on calf born basis. Additional incentive on the basis of the conception rate will also be made available to all AI technicians. 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- VII.**

13.2.3 **Using sex sorted semen for getting assured pregnancy:** 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. Extensive use would also increase the number of female animals thereby increasing income of farmers through sale of female or by sale of milk.

Sex sorted semen doses will be used for getting 51 lakh assured pregnancies, leading to birth of 45 lakh female calves. All the animals covered under the programmes will be registered and their data uploaded on Information Network for Animal Health and Productivity (INAPH) data base. Female calves born under the programme will also be registered using Pashu Aadhar and their data uploaded on INAPH data base. Sex sorted semen for assured pregnancy 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. Subsidy will be made available under the programme to farmers for getting assured pregnancy and from 3rd year onward subsidy will be reduced as cost of sex sorted semen will be reduced substantially and balance amount of fund for getting assured pregnancy will be met by the participating farmer. **Detailed guidelines are at Annexure-VIII**

13.2.4 Implementation of National Digital Livestock Mission (Livestack)

Under National Livestock Digital Mission (Livestack), all livestock related activities and transactions including health and breeding services, sale and purchase, etc shall take place in purely digital mode on the basis of the unique animal ID Pashu Aadhaar which is presently being assigned through ear tagging to all large and small livestock across the country. A complete open source tech stack will enable inputs of all reporting, including disease and outbreak reporting, by veterinarians and field level workers and service providers through a user end digital interface. Farmers can access their own data, make service requests, and access the latest technical and business information through an updated version of the farmer facing app e-GOPALA or through a connected national level four digit call centre number. Since all farmers would thus be linked, direct benefit transfers from all Central or State level schemes, and e-vouchers giving the power to choose a service provider, would also be possible through this mechanism. Through open APIs, third party entities such as dairy processors, other private companies, app developers, and researchers can access the database through established data sharing standards, and product traceability regulations designed and enforced on the basis of this database. Thus, not only the ease of working and accountability of service providers is increased manifold, and farmers are fully empowered, but also the entire economy around livestock is multiplied through this data. Finally, these datasets would be of high enough quality to permit use of Artificial Intelligence and Machine Learning to predict outbreaks and productivity issues well in advance so that corrective steps can be taken well in time. All these initiatives would make the livestock sector world class and enable high volumes of exports, which are presently negligible compared to the potential. National Digital Livestock Mission will be implemented through National Dairy Development Board.

13.3 Development and Conservation of indigenous Breeds

13.3.1 **Assistance to Gaushalas, Gosadans and Pinjarapoles**: Under the component provision of funds will be made available to those Gaushalas, Gosadans and Pinjarapoles which are maintaining elite animals of indigenous breeds. The institutes identified will be assisted for strengthening of cattle sheds, creation of drinking water facility, artificial insemination, biogas plant etc. Detailed guidelines will be issued separately.

13.3.2 **Administrative expenditure/ operation of Rashtriya Kamdhenu Aayog:** As per the cabinet approval RKA has been constituted by the Department vide order No. 3-260/2019-AHT (RGM) dated 21.02.2019. As mentioned in the Cabinet Note administrative expenses on operation of Rashtriya Kamdhenu Aayog will be met from Rashtriya Gokul Mission. Allocation of Rs 1 crore per annum will be made available for meeting operation cost of Rashtriya Kamdhenu Aayog.

13.4 Skill Development:

13.4.1 Assistance will be made available for training of professionals in IVF technology, other advanced reproductive techniques 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. Skill of the trainees will be assessed after completion of training.

13.5 Farmers Awareness:

13.5.1 For creation of awareness among the farmers, funds will be made available under the scheme for organising farmers training programme, fertility camps, publication of leaflets and pamphlets, milk yield competitions, calf rallies, workshops and seminars, development of audio video aids, wall paintings etc. All other extension activities required for effective implementation of the project will be supported under the component.

13.6 Other Activities related to cattle and buffalo Development

13.6.1 Research Development and Innovation in Bovine Breeding: Provision under the component is proposed for assisting institutes and organizations undertaking research in the areas of bovine breeding including innovators and start ups so that new innovation and research come up in the sector of bovine breeding. This will accelerate the growth of the sector by many folds.

13.6.2 Any other activity considered to be important to taken up under the project

will be allowed including creation of new infrastructure for bovine breeding.

14 Project Preparation and Submission of Proposal

14.1 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.

Annexure-I

Implementation of Progeny Testing Programme

1. Introduction

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.

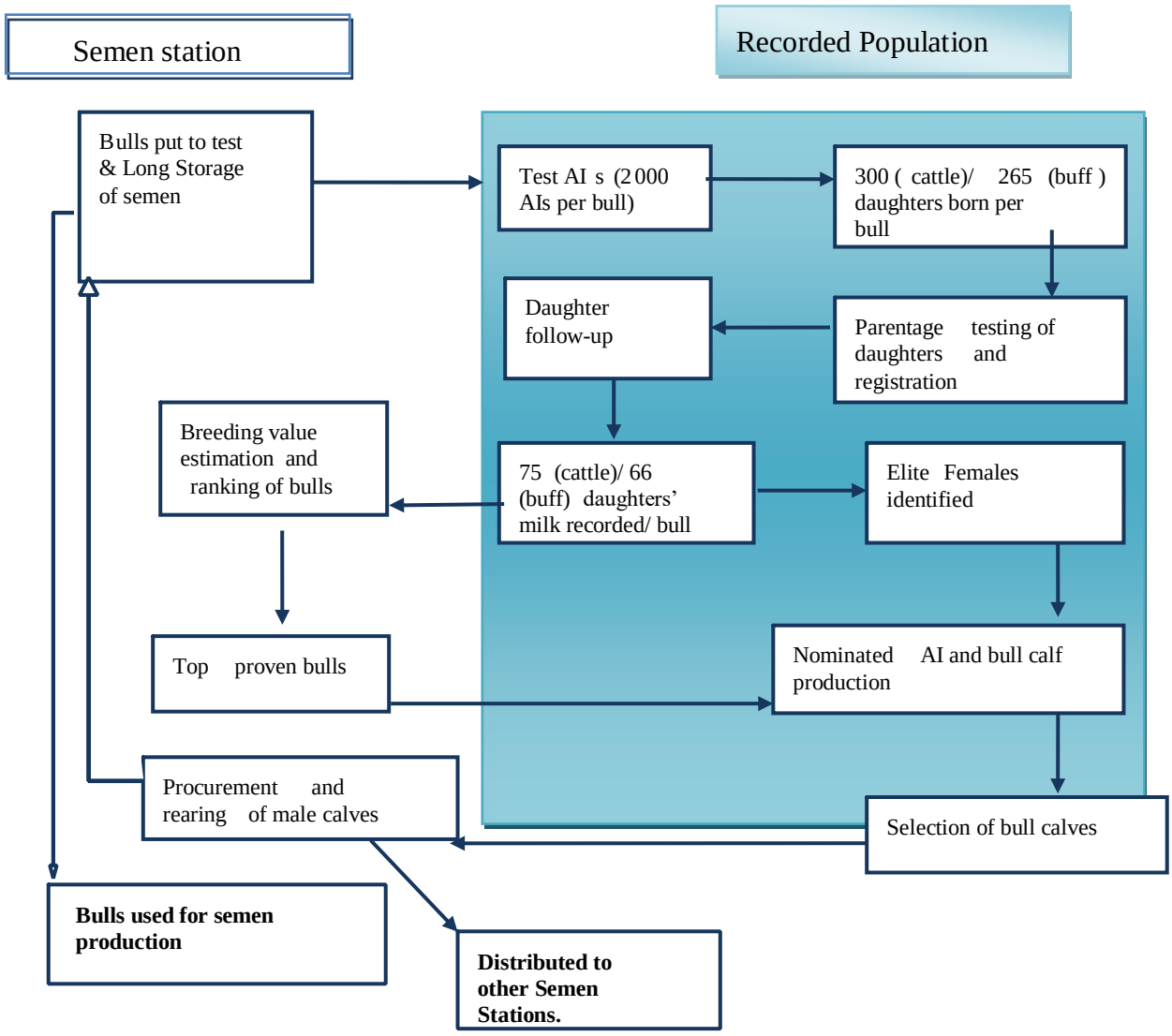
c) To achieve a steady genetic progress in the buffaloes or cattle population for milk, fat, SNF and protein yield and type characters in the villages where the progeny testing programme is implemented.

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.

4.2 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 INAPH (Information Network for Animal Productivity and Health) Application.

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 INAPH.

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 INAPH.

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 INAPH.

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:

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

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 INAPH system. 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 INAPH. 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 INAPH 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 INAPH application.

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 INAPH (Information Network for Animal Productivity and Health) application.

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

7 Fund Flow Mechanism

Funds under the project will be released directly to Implementing Agency. IA will transfer funds to Participating Agencies for implementation of the project.

Annexure-II

Pedigree Selection

1. Introduction

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.

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

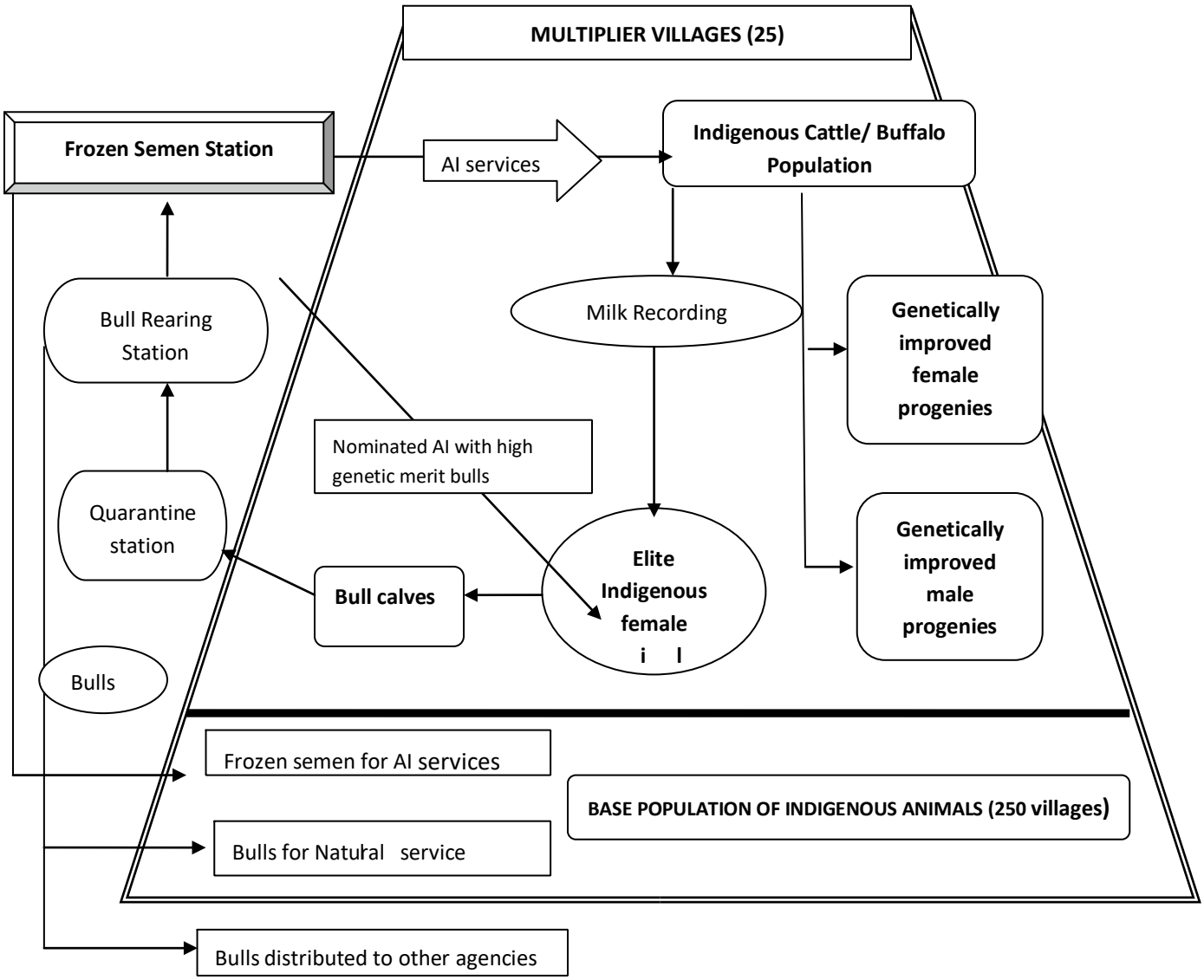
2. Objectives of the Programme

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 INAPH (Information Network for Animal Productivity and Health) Application.

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 INAPH.

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 INAPH.

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 INAPH.

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 INAPH system. 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 INAPH. 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 INAPH 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 INAPH application.

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 INAPH (Information Network for Animal Productivity and Health) application.

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

It is proposed to initiate New Pedigree selection project for Banni breed of buffalo from current year. Sarhad Dairy (Kutch District Cooperative Milk Union) will be participating agency of the project. This will enable creation of AI network in the breeding tract of Banni buffalo.

Fund Flow Mechanism

Funds under the project will be released directly to Implementing Agency. IA will transfer funds to Participating Agencies for implementation of the project.

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Annexure-III

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-IV

Accelerated Breed Improvement Programme

1. Objective of the Project:

1.1 Enhancing milk production and productivity through propagation of high yielding animals

1.2 Increasing availability of elite animals for milk production and for sale with the farmers

1.3 Creating additional income resources for farmers by using high yielding animals as donors.

1.4 Increasing availability of disease free animals of desired production and productivity.

1.5 Making IVF technology affordable and thereby increasing acceptability of IVF technology among farmers.

2. Action Plan

2.1 Project will be implemented through NDDB as implementing agency (IA) in identified milk pockets. Milk Federations/Milk Union will be participating Agency (PA) for implementation of the project.

2.2 Selection of service provider

2.2.1 The service providers identified to run operations of CCBF IVF would be allowed to be the service provider for this programme.

2.2.2 The National Dairy Development Board (NDDB) will float tender/RfP for discovery of rates from service providers for getting assured pregnancy in low producing recipients .

2.2.3 Payment to the service provider will be made on the basis of assured pregnancy at 90 days. In case there is no pregnancy established by the service provider there will be no payment (NPNP).

2.2.4 Service provider will be selected on least cost basis and allowed to establish pregnancy among low producing recipients.

2.2.5 Service provider will manage its own IVF lab or may make own arrangement to use IVF lab available in the States, established under Rashtriya Gokul Mission. Service provider will arrange all consumables for the project including hormones for estrus synchronization in recipients **or may arrange to use IVF labs available with CCBFs.**

2.2.6 Service provider will be allowed to use embryos of high genetic merit meeting MSP standards produced from elite donors maintained at its own donor farm or donors meeting MSP standards available with farmers.

2.2.7 Looking at the size of the project, more than one service providers may be awarded the portions of the targeted number of pregnancies with the condition to work in simultaneously at the same cost.

2.3 Selection of donors

2.3.1 Service provider will be allowed to use donors which are disease free as per the protocol prescribed in MSP for semen production. MSP for selection of donors is given at **Annexure-I.**

2.4 Donors available with Farmers:

2.4.1 Service provider will be allowed to use animals above MSP available with farmers as donors for oocytes collection. The milk production record of the donor cows is to be as per the milk recording system approved for Progeny Testing/Pedigree Selection programs under RGM project/ genomically tested. All the donors are to be registered in INAPH data base or certified by Milk Union.

2.4.2 Service provider may make available incentives to farmers managing donor animals @ **Rs 1000 per embryos/Rs 4000 per OPU session.**

2.5 Selection of Beneficiaries:

2.5.1 Farmers interested in taking up IVF technology will register with concerned Milk Federations/milk union or interested farmers may contact NDDB to taking up IVF pregnancy.

Incentives to farmers

2.5.2 Incentive @ Rs 5000 per pregnancy will be made available to the farmer as Government of India share. Milk Federations/Milk Unions may either further subsidize or facilitate farmers in taking bank loan for IVF pregnancy.

2.5.3 Assistance will be limited under the scheme for production of 1 female calf per beneficiary.

2.5.4 Male calves may be purchased by the LDBs/ semen stations for semen production. In case the male calf does not qualify the prescribed requirements, it would be the discretion of the concerned recipient owner/Milk Union to take decision on the disposal of the male calf.

2.6 Selection of semen:

2.6.1 Service provider will be allowed to use only sex sorted semen of bulls of very high genetic merit. In case of HF sire dam's lactation yield (ME) above 11000 kg; in case of Jersey sire dam's lactation (ME) above 7500 kg and in case of indigenous cattle and buffalo breeds sire dam's lactation (ME) above 4000 kg. In case of crossbred semen

shall be from bulls with dams lactation yield (ME) above 6000 kg in case of CBHF and (ME) above 4000 kg in case of CB Jersey.

2.6.2 In exotic breeds sire with positive estimated breeding values for volume of milk, milk fat and milk protein will selected. In case of indigenous cattle and buffalo breeds preference will be given to the sires with positive estimated breeding values or genomic estimated breeding values.

2.6.3 Sex sorted semen will be procured by the service provider from 'A' graded semen stations.

2.6.4 Service provider may also use imported sex sorted semen of indigenous/exotic breeds of desired standards and specifications.

2.7 Veterinary Aid:

2.7.1 Concerned Milk Union may take responsibility to provide veterinary aid to the calves born under IVF programme.

2.7.2 Calves born under the programme will be registered using AUID and data shall be uploaded on INAPH data base.

2.7.3 Growth and health data of calves will be maintained by the concerned Milk Union.

2.7.4 At sexual maturity, female claves born under the programme may be inseminated preferably using sex sorted semen of high genetic merit bulls.

3. Beneficiaries covered under the programme

3.1 It is proposed that 2 lakh pregnancies will be established over a project period of 3 years @ 66,000 pregnancy per year. About 2 lakh farmers will be benefitted from the project. During the project period 1.8 lakh female calves with high milk yielding potential will be added to the national milch herd. Project will be implemented through NDDB and during Phase-I, project will be implemented in the milk shed of 87 Milk Unions procuring more than 1 lakh lts of milk per day.

4. Financial Implication:

4.1 Financial implication of the project is depicted in the following table

S. No.	Activity Component	Government of India Share Rs in lakh	Total Rs in lakh
1	Farmers incentives for 2 lakh pregnancies	10000	10000
2.	Parentage testing	500	500

3	Farmers awareness programme (publication of leaflets, organization of seminars, milk yield competition etc)	50	50
3	Monitoring of the project by NDDB	500.00	500.00
4	Mid Term evaluation	50.00	50.00
5	Additional Manpower required at Head Quarter for implementation of the project (Veterinary Consultants (2), data entry operator (2))	60	60
	Total	11160	11160

4.2 An amount of Rs 111.60 crore has been for implementation of the project over the duration of 3 years.

5. Implementing Agency and Fund Flow Mechanism:

5.1 National Dairy Development Board (NDDB) will be the Implementing Agency (IA) of the project. Funds will be released directly to NDDB for implementation of the programme. During 1st Phase, project will be implemented in milk shed of 87 Milk Unions procuring more than 1 lakh lts of milk per day. List of Milk Unions is given at **Annexure II.** ***From the project incentives will also be made available to farmers for getting assured pregnancy through IVF technology from the service providers identified by Government of India for CCBFs located in the State of Gujarat, Rajasthan, Karnataka, Tamil Nadu, Odisha and Uttar Pradesh.***

5.2 Milk Federations/Milk Unions will be participating agency of the project. NDDB will release funds to Milk Federations/Milk Union in the bank account linked with PFMS as explained earlier in the guidelines.

6. Impact of the Programme:

6.1 With the implementation of the project 1.7 lakh (85% female calves and 15% male calves) female calves would be born. Out of which 144500 (15% would be deaths and culled with different reasons) high yielding females will be added to the milch herd thus additional 578000 tonnes of milk will be added annually from 1.45 lakh additional high yielding milch animals produced under the programme. Additional amount of Rs 17340 crores will be added annually to the rural economy of the country after three years of the project implementation. Thus with investment of Rs 111 crores return will be Rs 17340 crores from the project or **with investment of Rs 1 in implementation of the project return on investment will be more than Rs 156.**

6.2 Dairy farmers income through sale of milch animals will be increased by 1180 crores by taking cost of the high yielding milch animals as Rs 100000 per animal (In case all the female animals are sold).

6.3 Milk production in the country will grow at a much faster rate. Growth in milk production will be sustainable and will be continued over the years with the proposed investment.

7. Monitoring of the project:

7.1 Project will be monitored by National Dairy Development Board over duration of five years and funds are proposed under the project for monitoring of the project activities. Monthly progress report will be prepared by the participating milk unions/service providers and submitted to this Department through NDDB. All the activities related to IVF pregnancies shall be uploaded on INAPH data base. Provision will be made by NDDB for uploading IVF data on INAPH data base.

State Level

7.2 State/UT Level Review Committee meeting will be held every month under the Principal Secretary (Dairy Development/Animal Husbandry & Dairy Development) of the State to review progress of physical, financial and technical parameters. PD/MD of Milk Union/Milk Federation, CEO of LDB, Director (Animal Husbandry), and breeding experts of State veterinary University will be its members. Joint Secretary, DAHD or his representative will attend meeting once in every quarter.

Milk Federation/Milk Union

7.3 Monthly progress report will be prepared by the participating Milk Union 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.

7.4 Milk Federation/Milk Union will facilitate farmers for taking up parentage testing of atleat 10% calves born under the programme in consultation with NDDB. Cost of parentage testing is available at the rate Rs 1700 per test. Test will be conducted at the testing facility available with NDDB. Arrangement will be made by NDDB for sample collection and dispatch of samples to laboratory.

Annexure-I

Minimum Standard and specifications for Donors

S no.	Breed	1st lactation yield	Best lactation yield	Breeding value, if available	Gnomically estimated breeding value, (mandatory)
1.	Gir	3500	4000	+Ve	+Ve
2.	Sahiwal	3500	4000	+Ve	+Ve
3.	Red Sindhi	3500	4000	+Ve	+Ve
4.	Kankrej	3000	3000	+Ve	+Ve
5.	Tharparkar	3000	3500	+Ve	+Ve
7.	Rathi	3500	4000	+Ve	+Ve
8.	Murrah	3500	4000	+Ve	+Ve
9.	Nili Ravi	3500	4000	+Ve	+Ve
10.	Mehsana	3500	4000	+Ve	+Ve
11.	HF Pure	9000	10000	+Ve	+Ve
12	Jersey	7000	8000	+Ve	+Ve
13	CBJY	3400	4100	+Ve	+Ve
14	CBHF	4400	6000	+Ve	+Ve

Appendix-I

"A" Graded Milk Unions

LIQUID MILK PROCUREMENT (TKGPD) : PROVISIONAL				
S. No.	**STATE**	**UNION**	**Avg. 2019-20**	**Grading**
1	BIHAR	Begusarai	455	A
2	BIHAR	Muzaffarpur	227	A
3	BIHAR	Patna	312	A
4	BIHAR	Samastipur	363	A
5	BIHAR	Shahbad	208	A
6	JHARKHAND	Jharkhand Federation	117	A
7	ODISHA	Cuttack	184	A
8	HARYANA	Hissar Jind	117	A
9	PUNJAB	Amritsar	121	A
10	PUNJAB	Jalandar	172	A
11	PUNJAB	Ludhiana	380	A
12	PUNJAB	Patiala	105	A
13	PUNJAB	Ropar	493	A
14	RAJASTHAN	Ajmer	284	A
15	RAJASTHAN	Alwar	147	A
16	RAJASTHAN	Bhilwara	275	A
17	RAJASTHAN	Chittorgarh	113	A
18	RAJASTHAN	Ganganagar	106	A
19	RAJASTHAN	Jaipur	1,140	A
20	ANDHRA PRADESH	Guntur	279	A
21	ANDHRA PRADESH	Krishna	198	A
22	ANDHRA PRADESH	Vishakha	718	A
23	TELANGANA	Karimnagar	155	A
24	TELANGANA	TDDCF	269	A
25	KARNATAKA	Bengaluru	1,582	A
26	KARNATAKA	Belgaum	186	A
27	KARNATAKA	Bijapur	149	A
28	KARNATAKA	Chamarajanagara	234	A
29	KARNATAKA	D. Kannada	436	A
30	KARNATAKA	Dharwad	234	A
31	KARNATAKA	Hassan	874	A
32	KARNATAKA	Kolar	962	A
33	KARNATAKA	Mandya	768	A
34	KARNATAKA	Mysore	545	A
35	KARNATAKA	Raichur	191	A
36	KARNATAKA	Shimoga	520	A

LIQUID MILK PROCUREMENT (TKGPD) : PROVISIONAL				
S. No.	**STATE**	**UNION**	**Avg. 2019-20**	**Grading**
37	KARNATAKA	Tumkur	704	A
38	KERALA	Ernakulam	305	A
39	KERALA	Malabar	647	A
40	KERALA	Thiruvananthapuram	320	A
41	TAMIL NADU	Chen.Mgr	137	A
42	TAMIL NADU	Coimbatore	152	A
43	TAMIL NADU	Dharmapuri	174	A
44	TAMIL NADU	Erode	209	A
45	TAMIL NADU	Madurai	220	A
46	TAMIL NADU	Namakkal	155	A
47	TAMIL NADU	North Arcot (Vellore)	254	A
48	TAMIL NADU	Salem	477	A
49	TAMIL NADU	Villupuram (S Arcot)	223	A
50	TAMIL NADU	Thiruvannamalai	149	A
51	TAMIL NADU	Tiruppur	232	A
52	TAMIL NADU	Trichy	482	A
53	GUJARAT	Ahmedabad	317	A
54	GUJARAT	Amreli	107	A
55	GUJARAT	Banaskantha	6,014	A
56	GUJARAT	Bharuch	179	A
57	GUJARAT	Bhavanagar	239	A
58	GUJARAT	Botad	124	A
59	GUJARAT	Gandhinagar	269	A
60	GUJARAT	Kaira	3,020	A
61	GUJARAT	Kutch	271	A
62	GUJARAT	Mehsana	2,741	A
63	GUJARAT	Morbi	123	A
64	GUJARAT	Panchmahal	1,362	A
65	GUJARAT	Porbandar	255	A
66	GUJARAT	Rajkot	403	A
67	GUJARAT	Sabarkantha	2,710	A
68	GUJARAT	Surat	1,361	A
69	GUJARAT	Surendernagar	493	A
70	GUJARAT	Vadodara	630	A
71	GUJARAT	Valsad	835	A
72	MADHYA PRADESH	Bhopal	294	A
73	MADHYA PRADESH	Indore	281	A
74	MADHYA PRADESH	Ujjain	170	A
75	MAHARASHTRA	Baramati Taluka	225	A

LIQUID MILK PROCUREMENT (TKGPD) : PROVISIONAL				
S. No.	**STATE**	**UNION**	**Avg. 2019-20**	**Grading**
76	MAHARASHTRA	Godavari-Kopargaon Taluka	134	A
77	MAHARASHTRA	Jalgaon	270	A
78	MAHARASHTRA	Kolhapur	1,089	A
79	MAHARASHTRA	Pune	215	A
80	MAHARASHTRA	Rajaram Babu Patil-Walwa	135	A
81	MAHARASHTRA	Sangamner Taluka	356	A
82	MAHARASHTRA	Shree Warna	275	A
	Producer Companies			
83	UTTAR PRADESH	Saahaj	580	A
84	PUNJAB	Baani	281	A
85	RAJASTHAN	Paayas	879	A
86	ANDHRA PRADESH	Shreeja	404	A
87	GUJARAT	Maahi	801	A
	Source: *Milk Unions & Federations*			

Annexure-V

BREED MULTIPLICATION FARM

1 Introduction

At present entrepreneurs/farmers interested in taking up dairy programme are facing difficulties in sourcing disease free high yielding heifers or cows and farmers are dependent on either middlemen or other farmers maintaining dairy animals for sourcing low producing animals from other farmers engaged in dairying. There is no system available in the country for producing disease free elite animals of indigenous breeds of cattle and buffalo or exotic breeds of cattle. Therefore it is proposed to establish breed multiplication farms to make available disease free high yielding heifers/ pregnant heifers / cows preferably of indigenous breeds of cattle/buffaloes in the country.

Breed multiplication farm is proposed to be established through entrepreneurship model for making available high genetic merit heifers (HGM) to farmers to fulfill their need of general shortage of such animals.

It is proposed to make available 50% capital subsidy to interested entrepreneur for construction of cattle sheds, equipment, procurement of elite bull mothers etc. The entrepreneur will establish breed multiplication farm (BMF) and produce elite heifers using sex sorted semen or IVF technology.

Disease free heifers produced at the BMF will be made available to interested farmers on cost basis HGM bulls born at BMF will be procured by semen stations for semen production. BMF will also act as the training centre to conduct training for farmers and entrepreneurs.

2 Objective:

- To develop private entrepreneurs for undertaking cattle and buffalo breeding
- To make available disease free high yielding heifers/ pregnant heifers / cows preferably of indigenous breeds of cattle/buffalo.
- To incentivize private individuals Entrepreneurs, FPOs, SHGs, **FCOs,** JLGs, and Section 8 companies for establishment of breed multiplication farm
- Spreading awareness about scientific management practices including animal nutrition, disease prevention etc
- Multiplication of high yielding milch animals through scientific breeding including IVF technology and sex sorted semen

3 Essential Criteria of selection of entrepreneur:

- The entrepreneur-aggregator can be a private individuals / FPOs / FCOs/**SHGs /** JLGs and Section 8 companies.

- Entrepreneur shall have appropriate experience in breeding or rearing of farm animals

- The entrepreneur will be responsible for arrangement of land of suitable size and location. At least having ownership/lease deed of suitable size of land to house 200 animals and its followers.

- Any individual/ organization **availing** loan facility under Animal Husbandry Infrastructure Development Fund (AHIDF) for establishment of breed multiplication farm would also be allowed to obtain subsidy under breed multiplication farm.

- Entrepreneur will make its own arrangement for procurement of feed and fodder as per requirement of the farm.

The entrepreneur will establish breed multiplication farm of atleast 200 milch cows / buffalo and using latest breeding technology for continuously upgrading stock.

- The entrepreneur may make available 116 elite female calves to farmers on cost basis out of 160 calves born at the farm. Sex sorted semen and IVF technology will be used by the entrepreneur for production of female calves. Remaining female calves may be used for replacement of the stock available at the farm

- The entrepreneur will make available high yielding heifers/ pregnant heifers/cows to the farmers / small entrepreneurs interested in taking up dairying. The entrepreneur will also guide farmers on animal nutrition, vaccination, disease testing, maintaining bio-security etc and also provide veterinary aid to the farmer.

4 Funding pattern:

(i) Each entrepreneur will be provided as one time assistance from Central Government for establishment of breeder farm @ 50% of project cost. The other 50% should be managed by the beneficiary by obtaining loan from scheduled banks/ any other financial institutions like NCDC etc. Loan period, margin money and collateral may be as decided by the financial institution.

(ii) The capital subsidy will be provided for the cost of housing, procurement of breeding animals along with transportation & insurance cost, equipment /machines in the form of capital cost (except land).

(iii) The subsidy will be routed through NDDB.

5 Implementing Agency and Fund Flow Mechanism:

Project will be implemented through NDDB as implementing agency of the project. Subsidy will be released directly to in the beneficiary loan account through NDDB.

6 Project Approval and Monitoring:

- NDDB will float expression of interest for submission of the project as per guidelines of the scheme.

- Entrepreneur will formulate bankable proposal as per guidelines and submit proposal directly to NDDB. Entrepreneur will also tie up with bank/financial institution for obtaining 50% of the project cost as loan.

- On receipt of such proposals from entrepreneurs a committee constituted by Implementing Agency (NDDB) will screen all the application for eligibility.

- Eligible projects will be recommended by Implementing Agency (NDDB) to concerned bank/ financial institution for loan sanctioning.

- Implementing Agency (IA) will obtain proof from the bank/ financial institution that loan amount is sanctioned to entrepreneur and submit project for approval of DAHD.

- First installment of the 50% of the subsidy amount will be released after approval of the project by DAHD and **after bank/financial institution releasing 1st tranche in to the loan account of entrepreneur.**

- After the receipt of the report from Implementing Agency that full infrastructure is in place and animals have been inducted **another 25% of the subsidy amount will be released.**

- After receipt of report from Implementing Agency that births of 10% calves have been completed at the farm, **the remaining** balance 25% of the subsidy amount will be made available to entrepreneur.

- The assets will be monitored through GIS tagging. The State Government will be advised for physical monitoring of beneficiaries at regular interval.

Total Project Cost:

- Amount of Rs 4.00 crores will be required for establishment of breed multiplication farm with the capacity of 200 milch animals. Therefore, maximum subsidy will not exceed Rs 2.00 crores.

MODEL PROJECT:

Technical Programme:

200 cows/ buffalo of high yielding preferably of indigenous breeds will be inducted at the farm. Animal of indigenous breeds like Gir, Sahiwal, Red Sindhi, Tharparkar etc in case of cattle and like Murrah, Mehsana, Banni, Jaffarabadi, Nili Ravi etc in case of buffaloes) will be purchased from the breeding tract. Indigenous animals shall be yielding more than 3000 kgs per lactation (standard lactation yield). Exotic animals yielding more than 8000 kg per lactation in case of HF and 5000 kg per lactation in case of Jersey shall be allowed to be maintained. Crossbred animals shall be yielding more than 5000 kg per lactation in case of CBHF and 4000 kg in case of CB Jersey

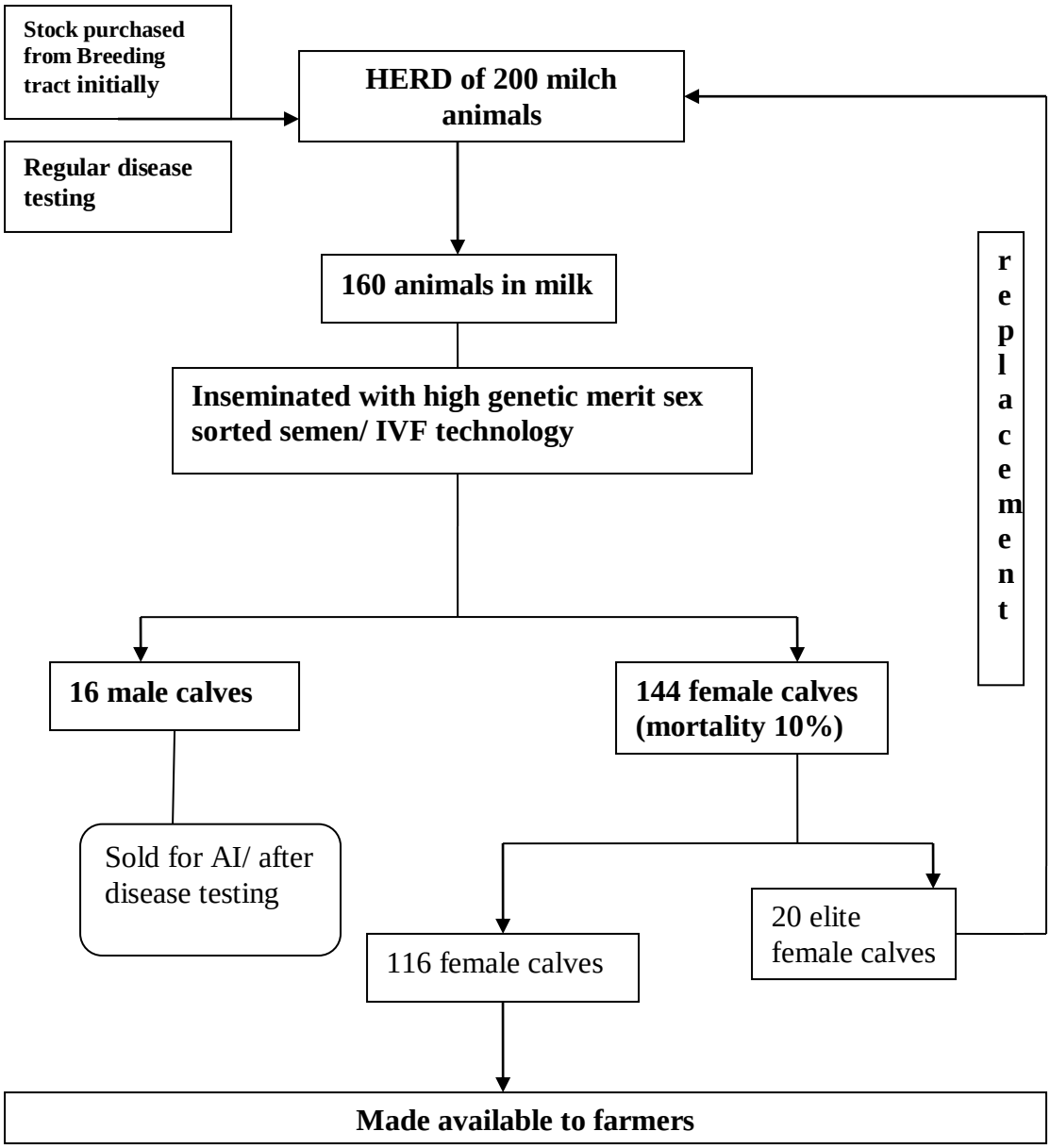
.

Animals will be inseminated with sex sorted semen preferably of progeny tested bulls with dams lactation yield above 4000 kgs in case of indigenous cattle/ buffalo breeds. Semen straws will be purchased from different semen stations in the country.

Farm may use IVF technology and implant embryos of indigenous cattle/buffalo breeds with high yielding potential. In embryo production donor of indigenous cattle/buffalo breeds may be yielding more than 4000kg and semen may be from indigenous cattle /buffalo bulls with dams lactation yield above 4000 **(in case of Kankrej more than 3000 kg and in case of Tharparkar more than 3500 kg)**. Bulls used in embryo production preferably progeny tested/ genomically tested.

About 140 female calves and 15 male calves will be born at the farm annually. 20 female calves from the elitist of elite dams will be retained at the farm for replacement of the herd @ 20% per annum. About 116 female calves would be sold to the farmers in the region.

Animals will be tested annually for Tuberculosis, Johnes Disease (JD), and Brucellosis and positive animals will be removed from the herd. Herd will be declared free of above diseases. The animals will be vaccinated against FMD (six month interval), HS (annually), BQ (annually), and Theileriosis (once in lifetime in case of exotic/crossbreds). However, the vaccination against the bacterial diseases will be done only if there is an outbreak or prevalence of a particular disease in the State. Exotic animals will also be tested for genetic disorders.



SOURCING OF ANIMALS:

Pure bred animals of indigenous breeds will be procured from breeding tract. Animals will be selected on the basis of the dams performance (breeding value, lactation yield & milk fat %) and sires' information. CHRS units will help the entrepreneur in procurement of animals.

Marketing support to entrepreneur

NDDB will provide support to entrepreneur in marketing of milk and heifers produced at the farm

Indicative cost of model project for establishment of Breed Multiplication Farm

S. No	Particulars	Total Cost (Rs in lakh)
1	Purchase of cows in first lactation/2nd lactation	200
2	Construction of cow sheds 10 sq meter per cow (sheds to house 200 cows and its followers	100
3	Construction of isolation shed	2.5
4	Administration block	20
5	Feed & fodder store room	40
6	Tractor 75 HP, with agriculture implements	10
7	Dairy equipments (BMC, stainless steel Milk cans, digital milko tester, deep freezer etc)	5
8	Shed for Agri implements	22.5
9	Chaff cutter (electric)	1
	Total	401

Entrepreneur may be allowed to maintain herd of exotic/ crossbred. However may use IVF technique to produce calves with high genetic merit of indigenous breeds.

Annexure-VI

MULTI PURPOSE AI TECHNICIANS IN RURAL INDIA (MAITRIs)

Introduction

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.

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 this 1,16,586 AI technicians are available in the country leaving a gap of 90958 AI technicians.

The primary focus of the project is to enhance productivity of existing bovine population by increasing Artificial Insemination coverage through establishment of Multi Purpose Artificial Insemination Technicians in Rural India (MAITRIs) to deliver artificial insemination services at farmers doorstep on self sustainable basis through collection of cost of goods and services. Benefit of the project directly accrue to 90958 educated rural youth and about 8.12 crore farmers engaged in dairying will get indirect benefit in terms of increased productivity and milk production.

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. Establishment of MAITRIs:

3.1 The project will accomplish training of 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 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 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 established as MAITRIs

4.2.2 Minimum education qualification: 10th Pass and minimum age for AI workers may be fixed at 18 years by IA.

5. Curriculum and Standards:

5.1 Curriculum

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 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 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 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. Gram panchayats 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 MAITRIs

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

The 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 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 MAITRIs working in the State will be registered by the State Animal Husbandry Department.

5.5 Retraining/Refresher training of MAITRIs

If MAITRIs are found to be deficient in their skill, then they will be retrained at accredited training institutes for duration of 5 days. All 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 Rs 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 Rs)
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	Rs 6000/-
	Total	31000/ Trainee

6.2 Placement support for MAITRIs:

After completion of training AI workers will be established as MAITRIs under the scheme. Equipments costing Rs 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	Rs 8000/ AIT
2.	Mother Cryocontainer @ 1 per 5 AI technicians; Rs 25000/container	Rs 5000 / AIT
3.	AI kit (digital AI gun, straw holding forceps (tweezers), deep stick, straw cutter, thermos flask, digital unbreakable thermometer, Gum Boots, Apron, cap, kit bag, Gun holder, sheath holder, scissors, castrator, trevis etc)	Rs 32000 / AIT
4.	Transport cryocontainer @ 1 per 5 AI technicians Rs 25000/container	Rs 5000 / AIT
	Total	50,000/ AIT

6.3 Post Placement support to MAITRIs:

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

6.3.2 Placement: After training 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 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 MAITRIs with AI service providers

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.

9.5 Online Monitoring

Data on AI carried out by MAITRIs will be uploaded on INAPH data base. Performance of MAITRIs working in the field will be assessed by IAs through INAPH data base.

Appendix-I

Required Standard Facilities at AI Training Institute

1. Class room facilities:

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.

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.

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 Pinjarapoles 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 INAPH 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.

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

3) Record keeping and using INAPH.

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 INAPH

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-VII

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 Every selected village has to be allocated separate A.I worker/ MAITRI so that 3-4 AI per A.I worker/day is done and every district achieves **900-1200 A.I per day.**

2.6 The selection of districts will be based on the A.I Coverage data made available by the States during 2019-20. 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. SELECTION OF VILLAGES:

All breedable bovines available in all the villages of the district shall be covered

through free Artificial Insemination service thereby, ensuring complete saturation of the whole district under the programme. Special emphasis to be given to those villages, which were not covered so far under NAIP Phase I & II.

Selection of districts is based on the A.I Coverage data made available by the States during 2019-20. 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.

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 etc. Funds will be released directly to the Implementing Agency (IA).

6. Action Plan:

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

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 3 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 e-pashuhaat.

Training:

6.9 Trainers' trainings on data uploading on INAPH data base have already been completed in the States. Training of all the A.I technicians shall be organized with the help of these TOT's again in every district, where District Animal Husbandry Officer (DAHO)/ District Veterinary Officer (DVO) should also update them on technical aspects of A.I.

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 INAPH 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 III @ testing cost of Rs. 3400/- (testing has to be done for both dam and calf @ Rs.1700/- as testing fee for each sample of dam and calf).

Data Uploading on INAPH:

Procedure for uploading of data:

6.14 The technician has to open the INAPH LITE application, on INAPH database.

6.15 He has to enter his user ID and password (provided by NDDB to IA).

6.16 He has to fill up the registration form on Animal Details. He has to fill all the fields compulsorily (Stepwise format attached at Annexure III). Wherever boxes are provided, he has to enter the numbers or √ marks or option to be chosen from dropdown list).

6.17 After filling up animal registration, he has to fill up details of the owner of the animal.

6.18 Once registration of animal and owner is over, he has to fill up details on A.I under A.I transaction.

6.19 After 3 months of insemination, he has to fill up the result on pregnancy

diagnosis whether the animal has become pregnant or not.(√)

6.20 After an approximate period of 10 months, he has to enter the data on details of calving.

6.21 If tablets are not available, data entry sheets have to be printed and supplied to the A.I technicians by the concerned IA's. AI technicians shall record information on the data sheet and shall either themselves upload the data through their mobiles or shall submit to the officer designated by District authorities for uploading of data on INAPH database.

6.22 Data uploaded by AI technicians / District/Block level with desktop facility on INAPH data base may be used for online monitoring of the project activity.

Data Reporting of Progress on INAPH:

6.23 Daily reporting of village wise and district wise progress on the No. of AI done shall be done by the concerned DAHO on INAPH data base so as to provide public scrutiny/ assessment of the programme. Reports on follow-up on the A.I done, that is Repeat A.I, Pregnancy diagnosis after a period of 3 months of A.I and calves born details after gestation period (280 days in case of cows and 310 days in case of buffaloes) of AI shall also to be uploaded on INAPH. The DAHO shall ensure that the progress is uploaded for all activities related to A.I on INAPH immediately, to ensure that the data made available is on real time basis.

Farmer Awareness:

6.24 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.

6.25 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.

6.26 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.

6.27 **At district level:** A fund of Rs.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 A.I technicians after A.I is performed, to know about the details of semen used for A.I and about the bulls.**

6.28 **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.

6.29 **At State level:** For creating awareness about the programme at State level, Rs.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 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.

3.1 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.

3.2 Central Monitoring Committee Central Monitoring Committee has been constituted in the Department of Animal Husbandry and Dairying (DAHD) and regular meetings of TMC will be held on monitoring of the programme. In this regard, 3 Veterinarians and 1 Management Consultant will be hired for monitoring

the AI progress. Three data entry operators will be hired on consolidated salary basis of Rs. 18000/-month.

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

7.6 Call Centre at DAHD: Call centre created under NADCP programme will be utilized for NAIP to undertake concurrent evaluation of the programme.

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 for Tagging: An incentive of Rs.2.50 per animal will be given for tagging under NADCP.

8.3 Incentive will be made available to the private AI technician/MAITRIs @ Rs 50/ per AI and Rs. 100/- per calf born. All incentives for private A.I technicians/ MAITRIs to be disbursed strictly based on the data uploaded on INAPH 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.

8.4 Additional conception linked incentive will be made available @ Rs 150 if conception achieved at 1st AI and Rs 100 if conception achieved at 2nd AI. The conception linked AI will also be made available to Government AI technicians.

8.5 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 @ Rs.100/- per A.I. and Rs 100 per calf born. Additional conception linked incentive as mentioned above will also be admissible to AI technicians in NER States. .

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-VIII

Accelerated Breed Improvement Programme -Using sex sorted semen for getting assured pregnancy

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:

Selection of semen production facility for supply of sex sorted semen:

3.1 Freight On Road (F.O.R.) rates for supply of quality sex sorted semen to Implementing Agencies/ AI technicians by sex sorted semen production facility will be discovered by NDDB through online tendering process in a transparent manner.

3.2 All semen stations having facility for sex sorted semen production may participate in the tender. Eligible semen stations (meeting all standards and specifications) may supply sex sorted semen doses of the breeds maintained at semen stations at the lowest rate discovered by NDDB.

3.3 Implementing Agencies (IA) will be allowed to purchase sex sorted semen doses only from the semen stations identified by NDDB (meeting all eligibility criteria) and on the discovered rates.

Payment for sex sorted semen doses:

3.4 **80% of the total** Payment will be made by IA to sex sorted semen/ sexed semen production facility after quality testing of sex sorted/sexed semen straws for sperm concentration which shall not be less than 2.1 million and post thaw motility shall not be less 50% (with not less than 1.3 million progressively motile sperms/ straw) and experts available at sex sorted semen production facility complete training/orientation programme for AI technicians .

3.5 Additional straw shall be made available by semen production facility for testing may be at the rate of 2 straw per batch of sex sorted semen doses.

3.6 **15% of the total payment** will be paid after verification of conception rate in first 2000 AIs with sex sorted semen. Conception rate shall not be less than 30% in any case. In case conception rate is less than 30% the sex sorted semen production facility will replace all the straws available under storage with implementing agency.

3.7 **5% of the balance payment will be made** after verification of female calves born in 30% of the representative doses supplied under the programme. In any case female to male calf sex ratio shall not be less than 90:10.

Implementing Agency using its own AI network

3.8 IA will charge the farmers for getting assured pregnancy through use of quality sex sorted semen.
3.9 IA will be allowed to use only sex sorted semen produced by semen stations (meeting all eligibility criteria) empanelled by NDDB and only on rates discovered by NDDB.
3.10 Implementing agency may identify service provider for getting assured pregnancy by using of sex sorted semen through online tendering process in a transparent manner.

Quality parameters of sex sorted semen

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

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

3.12.1 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

3.12.2 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.

3.12.3 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

3.12.3 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.

3.13 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).

3.14 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

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

3.16 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.

3.17 AI technicians participating in implementation of the programme shall be registered with Implementing Agency and their profiles shall be uploaded on INAPH data base and linked to e-Gopala App.

3.18 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.

3.19 AI technicians engaged in implementation of the programme will be supplied with sex sorted semen with unique number on each straw. Sex sorted semen production facility will be requested to use unique color for sex sorted semen straws.

3.20 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.

3.21 AI technician will take photo of empty straw through his mobile after performing AI and hand over empty straw to concerned farmer. It is the responsibility of AI technician for uploading all details of AI on INAPH data base along with photo of empty straw.

Incentives to AI technicians

3.22 Provision of incentives to private AI technicians under the project will be at the rate of Rs 100 per AI with sex sorted semen. Additional incentives to AI technicians both private and Government attaining higher conception rates Rs 300 for conception at first AI and Rs 150 for attaining conception at 2nd AI. Incentive @ Rs 100/ calf born will also be made available to private AI technicians.

3.23 Incentives will be made available on the basis of verification of the data uploaded by AI technicians on INAPH data base and photo of empty straw.

Selection of Beneficiaries:

3.24 Scheme will be available to all the farmers interested in taking up assured pregnancy with sex sorted semen.

3.25 Heifers and normal cyclic cows in 1st to 3rd lactation available with the farmers may be selected and covered under the programme for getting assured pregnancy 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.

3.26 Beneficiary will register with Implementing Agency (SLDB/Milk Federation /DAH/ NDDB (NDS)) to take benefit of the scheme.

Support to farmers available under the project

3.27 Support will be made available under the programme to farmers for getting assured pregnancy @ Rs 750 per pregnancy or 50% of total cost discovered per pregnancy (on average 3 doses per pregnancy) using sorted semen whichever is lesser upto 2nd year of the project and from 3rd year onwards subsidy will be reduced to Rs 400 per pregnancy or 50% of total cost discovered per pregnancy using sorted semen whichever is lesser, as cost of sex sorted semen will be reduced substantially and balance amount of fund for getting assured pregnancy will be met by the participating farmer.

Parentage testing

3.28 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. Targets of the project:

4.1 Under the programme it is proposed that Sex Sorted semen doses will be used for getting 51 lakh assured pregnancies, leading to birth of 45 lakh female calves.

4.2 Concerned Milk Union/ State Animal Husbandry Department will be requested to take responsibility to provide veterinary aid to the calves born under the programme.

5. Implementation Mechanism

Area of Operation

5.1 Project will be implemented in all States and UTs

Contract with farmers for getting assured pregnancy

5.2 Implementing Agency (SLDB/ DAH/Milk Federation (MU)/ NDDB (NDS)) will enter into contract with farmer for getting assured pregnancy using sex sorted semen and farmer will deposit his share of Rs 750 (during first two years of the project) and Rs 400 from 3rd year onward of the project.

5.3 Farmers will be advised to register Heifers and normal cyclic cows in 1st to 3rd lactation for covering under the programme. Animals to be covered under the programme shall be assessed by AI technician for fertility, reproductive disorders etc. Only animals with higher fertility shall be covered under the programme.

5.4 If successful pregnancy is not delivered even after 3rd AI in a cow/buffalo then entire amount will be returned to concerned farmer by IA. If male calf is born then, Rs. 500 will be returned to the concerned farmer.

5.5 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.

5.6 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.

5.7 All the information that is starting from registration of animal to calving, uploading photograph of empty straw of sex sorted semen, ear tagging of calf and parentage verification shall be entered by AI technicians on INAPH system.

5.8 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.

6. Financial Implication:

The indicative financial outlay of the program:

SN	Particulars	Financial Outlay in Rs in crore
1	Getting assured pregnancy using sex sorted semen (Rs 750 /pregnancy during 1st and 2nd year and Rs 400/ pregnancy from 3rd year of the project)	323
2	Incentives to private AI technicians	100
3	Incentives to AI technicians on calf born @ Rs 100/ calf born	51
3	Consumables for AI@ Rs 10/ AI	15
4	Extension activities for the popularity of the Program (Rs. 10 lakh per state/year) to SIA	5.10
5	Parentage verification of randomly selected female calves born from Sexed Semen (at least 1000 female calves per state to be randomly tested for Parentage Verification) @ Rs 1700 per test	8.67
6	Monitoring of the Program-NDDB	3.00
	Total Outlay	**509**

7. Implementing Agency:

7.1 The component using sex sorted semen for getting assured pregnancy 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.

7.2 The Implementing Agency will either implement the programme through Service Provider or through own breeding network. Funds under the scheme will be transferred directly to Implementing Agency.

7.3 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.

8. Monitoring of the project:

8.1 **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:

- Preparation of Operational Guidelines of the Program
- 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 INAPH 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.

8.2 **Monitoring at the level of Call Centre:**

Call centre established under NADCP programme will be utilized for verification of AI conducted, and female calves born under the programme at regular intervals. Information received from the call centre will be analysed and submitted to IAs to take remedial measures.

8.3 **Online Monitoring of the project:**

- For online monitoring all the activities of the project including identification of animals covered under the programme using Pashu Aadhar (AUID), AI using sex sorted semen, pregnancy diagnosis (after 90 days), birth of the calf, identification of claves using AUID will be uploaded on INAPH data base by AI technicians. Incentives to AI technicians will be made available on the data basis of uploaded on the INAPH data base.
- AI technician will upload photograph of empty straw of sex sorted semen immediately after AI and handed over empty straw to concerned farmer.
- Verification of information entered by AI technician on the INAPH data base by local veterinarian/ DAHO on daily basis.
- System of push and pull messages to the beneficiaries from the data base at regular interval will be evolved.
- Verification of information uploaded on INAPH data base by NDDB at regular interval (after every 15 days).

8.4 Close Monitoring of the Project

- All the activities Project will be monitored by National Dairy Development Board as Nodal Monitoring Agency over duration of five years throughout the country.

- 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.

- Pashu Sakhis 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 month 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. Joint Secretary, DAHD or his representative will attend meeting once in every quarter. 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.

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