

# **National Dairy Plan Phase I**

## **Manual on Progeny Testing**



Project Implementation Plan: Volume IV A

Project Management Unit  
(located in NDDB)



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## **Abbreviations**

AI	:	Artificial Insemination
AIT	:	Artificial Insemination Technician
AV	:	Artificial Vagina
BMC	:	Bulk Milk Cooler
BAIF	:	Bharatiya Agro Industries Foundation
BQ	:	Black Quarter
BV	:	Breeding Value
CCBFs	:	Central Cattle Breeding Farms
CEO	:	Chief Executive Officer
CFSP & TI	:	Central Frozen Semen Production and Training Institute
CFU	:	Colony Forming Unit
CL	:	Corpus Luteum
CMU	:	Central Monitoring Unit
CRI	:	Calf Rearing In-charge
DADF	:	Department of Animal Husbandry, Dairying & Fisheries
DC	:	District Coordinator
DCS	:	Dairy Cooperative Society
DIC	:	Differential Interference Contrast
DNA	:	Deoxyribonucleic Acid
EIA	:	End Implementing Agency
ELISA	:	Enzyme Linked Immunosorbent Assay
FMD	:	Foot and Mouth Disease
FSH	:	Follicle Secreting Hormone
FUR	:	Fund Utilization Report
GoI	:	Government of India
GRM	:	Grievance Redressal Mechanism
GRO	:	Grievance Redressal Officer
HEPA	:	High-Efficiency Particulate Air
HF	:	Holstein Friesian
HS	:	Haemorrhagic Septicemia
IBR	:	Infectious Bovine Rhinotracheitis
IBRD	:	International Bank for Reconstruction and Development
IDA	:	International Development Association
INAPH	:	Information Network for Animal Productivity & Health
JD	:	Johne's Disease

LN	:	Liquid Nitrogen
LRP	:	Local Resource Person
MAIT	:	Mobile Artificial Insemination Technician
MC	:	Management Committee
MMT	:	Million Metric Tonne
MoA	:	Ministry of Agriculture
MoU	:	Memorandum of Understanding
MRT	:	Milk Ring Test
MT	:	Metric Tonne
NDDB	:	National Dairy Development Board
NGO	:	Non Government Organisation
NPCBB	:	National Project for Cattle and Buffalo Breeding
NS	:	Natural Service
OIE	:	World Organisation for Animal Health
PC	:	Project Coordinator
PD	:	Pregnancy Diagnosis
PDA	:	Personal Digital Assistant
PIP	:	Project Implementation Plan
PMC	:	Project Management Cell
PMU	:	Project Management Unit
PT	:	Progeny Testing
PTM	:	Post Thaw Motility
RBP	:	Ration Balancing Program
SOPs	:	Standard Operating Procedures
TB	:	Tuberculosis



## **Foreword**

To achieve the twin objectives of increased milk production and increased returns to the farmers, it is necessary that we provide the farmers with an efficient milk producing animal with improved productivity. One of the key factors affecting productivity is the genetic ability of an animal for milk production which is an inherited character and other being an enabling environment. The breeding bull contributes significantly in enhancing the genetic potential of its progenies for economically important traits like milk production, fat and protein production, fertility, body conformation etc. Therefore, production and selection of breeding bulls with high genetic potential for milk production and other important traits and transmitting their genetic potential to maximum number of progenies is very important in any animal breeding programme. Progeny Testing is a method for accurately selecting such breeding bulls and producing future bulls. This manual has been prepared primarily for the agencies that would be implementing a progeny testing programme under field conditions. This would help equip the project staff with sufficient knowledge and train them in all skills essential to implement the project effectively and in a comprehensive manner.

The manual has specific Standard Operating Procedures (SOP) and minimum standards for implementing a progeny testing programme for cattle and buffalo bulls under field conditions and for production of quality bulls by inseminating best performing elite females owned by farmers using semen of top ranked progeny tested bulls. It also describes the objectives, Standard Operating Procedures (SOP) and minimum standards for each activity, management and monitoring mechanism, and key institutional arrangements necessary for implementing a Progeny Testing Programme.

It is expected that this Manual for a Progeny Testing Programme will be a useful guide for the people directly or indirectly involved with the project.

## **1. Introduction**

### **1.1. What is a manual and why it is needed?**

1.1.1. A manual is a reference book, which presents information that is necessary for operating or implementing a particular system, project etc. It is written to give sound technical guidance to the people implementing a project. A manual basically tells: what one is supposed to do, how one should go about it, when and where and by what means one should execute a particular task, with whom and with whose support one should implement a project etc. It is needed since it becomes the guiding document according to which the project should be implemented.

### **1.2. Whom is this manual for?**

1.2.1. This manual has been prepared primarily for the agency, which would be implementing a progeny testing programme under field conditions and for those project personnel who would be directly or indirectly involved in the project. This would help the project staff in acquiring sufficient knowledge to implement the project in a comprehensive manner.

### **1.3. Progeny Testing: A Background**

1.3.1. Productivity of dairy animals is influenced by their genotype and the environment in which they are maintained. Enhancing the productivity thus requires increasing the genetic potential of animals and providing an optimal environment to achieve the expected genetic potential.

1.3.2. A steady increase in the genetic potential of animals in any population can be achieved by systematic selection of parents, generation after generation, on a continuous basis. The selection of males always assumes greater significance in



any genetic improvement programme as their contribution to the next generation is significantly higher than females. A bovine female can produce only one progeny in a year, whereas a bovine male can breed around 100-150 females in the same period. Besides, when artificial insemination (AI) is practiced as a breeding tool in place of natural mating, semen produced by a bull in a year could be used to breed thousands of females and therefore, the importance of accurately selecting male becomes even more critical. In absence of any selection programme for males, no significant genetic progress can be expected in any population.

- 1.3.3. Absence of systematic selection of males for artificial insemination is the main reason for the low productivity of dairy animals in the country. Though AI was introduced right in the first five year plan, there has not been many large scale attempts to produce high genetic merit bulls through systematic genetic improvement programmes. Most of the bulls used for semen production are being picked up from villages or institutional farms based on their dam's morning-evening milk records or reported peak yields or lactation record and without verifying their parentage.
- 1.3.4. High levels of productivity in advanced dairy producing nations have been achieved primarily through continuous use of genetically superior bulls produced through field progeny testing programme and by bringing larger and larger proportion of breedable animals under Artificial Insemination (AI) services. In India at present hardly 10-15% of the total bulls used for semen collection have come from any systematic genetic improvement programme and not more than 20% of the total breedable cattle and buffaloes are being artificially inseminated. This is one of the main reasons for low productivity of our animals.

- 1.3.5. In fact, the primary focus of AI has been for crossbreeding and as crossbreds produced from any exotic bull had significantly higher milk yields than their local mothers, perhaps the emphasis required on selection of bulls was ignored. Many have not realized that the drop in productivity of crossbreds in subsequent generations produced through *inter se* mating is due to the absence of selection programme for crossbred males.
- 1.3.6. Under NDP I, a long term plan for meeting the major requirement of breeding bulls of various breeds through Progeny Testing and Pedigree selection programmes in partnership with interested agencies committed to follow a standard procedure of evaluation and production of bulls and to achieve the targeted bull production and through small import of embryos/bulls has been recommended.

#### **1.4. Rationale of the Programme**

- 1.4.1. The annual demand for milk is projected to reach around 200 Million MT by 2021-22. Given the present productivity levels of our bovines and the resource constraints, it is impossible to meet this demand through domestic production unless productivity of our bovines increases. A three pronged strategy is planned to achieve this target. Increase the proportion of animals under AI from existing 20% to 50%, strengthen the frozen semen production infrastructure to produce quality semen to meet the requirement of this increased AI coverage, and produce bulls of high genetic merit for semen production. To produce the required bulls of various breeds and breed combinations, it is planned to set up progeny testing programmes in pockets where the best genetics and adequate number of breedable females are available and where a large proportion of breedable females are artificially inseminated.

- 1.4.2. There are a very few agencies in this country, which have taken up field based progeny testing programmes for large scale bull production. Kerala Livestock Development Board is the pioneer in this field and had been implementing a programme for crossbred bulls for the last few decades. BAIF Development Research Foundation is also involved in a programme for evaluation of HF crossbred bulls jointly with Project Directorate, Meerut for the last 15 years. Andhra Pradesh Livestock Agency is another agency which has been carrying out a field-based PT programme for Murrah and Jersey crossbred bulls. Other two agencies namely Sabarmati Ashram Gaushala, Bidaj and Mehsana District Coop Milk Producers' Union have also been implementing bull evaluation programmes for HF crossbred, Murrah and Mehsana buffalo bulls for more than 15 years under the technical guidance of NDDB. Besides these, there are some institutions which evaluate bulls at the farm level, but their scale of operation is very small.
- 1.4.3. The above agencies, however, produce bulls for their own semen stations. So far no effort has been made to work out country's requirement of breeding bulls for frozen semen production and plan genetic evaluation programmes for production of the required bulls. The situation in this country is complex. We require not only breeding bulls of different indigenous cattle breeds, indigenous buffalo breeds, crossbred bulls of Jersey and HF and pure HF and Jersey bulls, but they are required also in very large numbers as our annual semen requirement would be around 140 million doses by 2021-22. Also, we do not have AI infrastructure in breeding tracts of some of the local breeds of cattle and buffalo to take up a progeny testing programme. In such cases we have to depend on pedigree selection based on a systematic milk recording programme. Required pure Jersey

bulls would have to be imported as we do not have pure Jersey herds in the field in the country for PT programme. A small number of pure HF bulls could be produced in some pockets, but the remaining required HF bulls may have to be imported.

- 1.4.4. NDP I envisages a long-term plan for meeting the major requirement of breeding bulls of various breeds through Progeny Testing and Pedigree selection in partnership with interested agencies committed to follow a standard procedure of evaluation and production of bulls and to achieve the targeted number of bulls, and a small requirement of bulls also through import of bulls/embryos.

## **1.5. Objectives of the Programme**

- 1.5.1. The main objectives of the Progeny Testing Programme are:
- To produce the required genetically superior quality bulls for semen production stations through progeny testing
  - To achieve a steady genetic progress in the buffaloes or cattle population for milk, fat and protein yield and type characters in the villages where the progeny testing programme is implemented

## **2. PT Programme: An Overview**

### **2.1. Prerequisites for an agency contemplating a PT project**

2.1.1. The main prerequisites are that the agency should have:

- a. Identified an area having a sizeable breedable female bovine population of the proposed breed in a compact area;
- b. Either a network of mobile AI technicians or tie up arrangement with an established AI service provider to carry out test AIs in the identified area;
- c. Village level infrastructure and exclusive manpower to implement and supervise the project;
- d. Own a Semen Station Graded “A” or “B” or should have an arrangement with a semen station graded “A” or “B” by the CMU of GoI in their latest evaluation - for putting in place the required number of bulls under test and obtaining the required number of test doses and semen doses for long term storage from the bulls put under test;
- e. Qualified manpower for implementation of project; and ;
- f. A long-term financial commitment.

### **2.2. A Snapshot of Activities under a PT Project**

2.2.1. A schematic representation of various activities that should be taken up in the project is given in Figure 2.1. The major activities to be undertaken include:

- a. Identification of Area of operation
  - o A PT Programme for a breed would be taken up in a compact area where a sizeable number of breedable animals of the identified breed are available and a reasonable size of

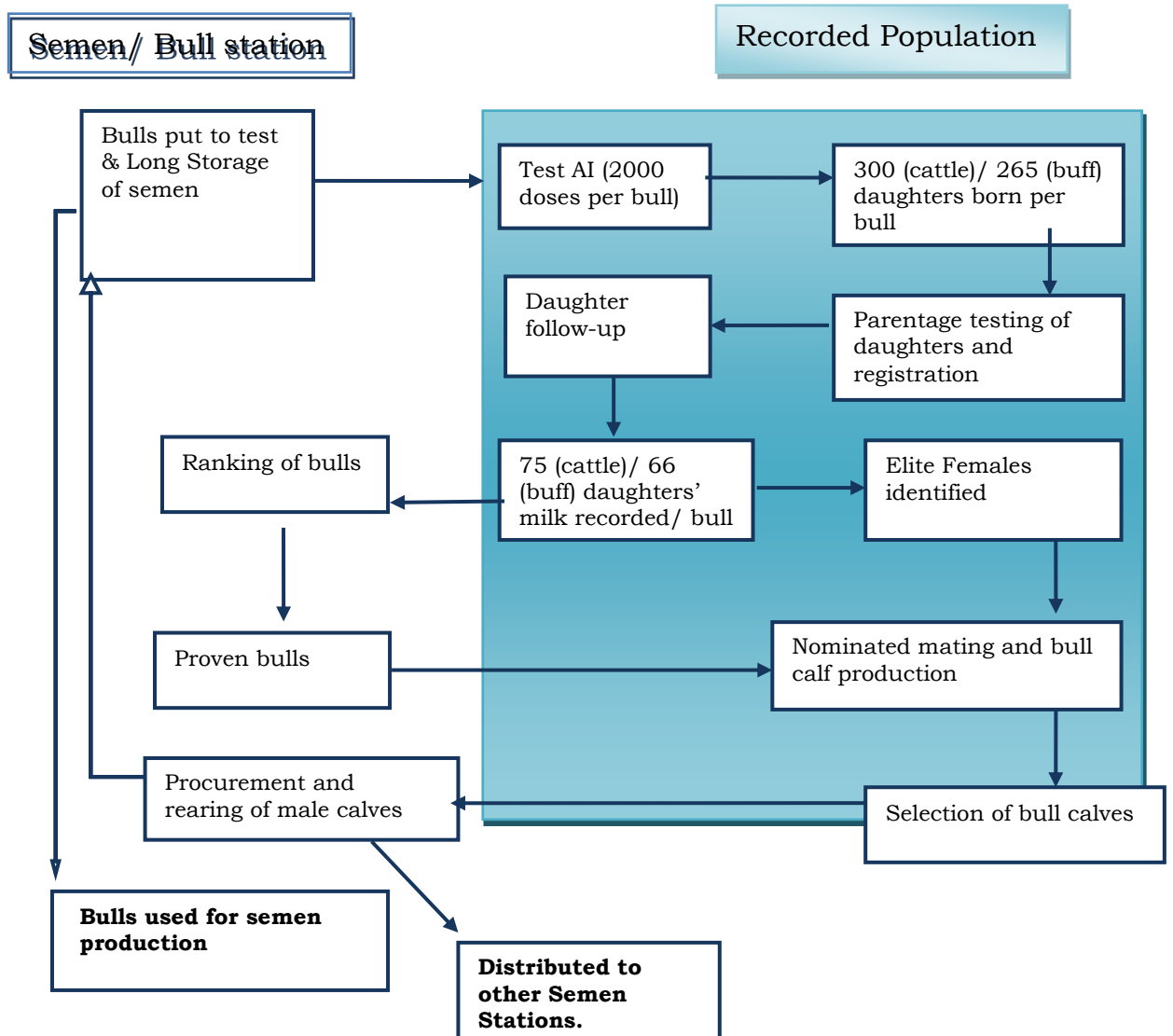
AI infrastructure exists. Other factors that should be considered may include: percentage of animals of the identified breed under AI coverage, aptitude and awareness of the farmers and AI service providers towards the programme, performance of AI technicians etc. AI centres shall be selected based on their performance, preferably in a compact area. 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 -18 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.

- b. A minimum of 20 bulls of a breed shall be put to test annually in one project.
- c. A minimum of 2000 test doses per bull shall be distributed in identified villages so as to conduct a minimum of 2000 test inseminations and about 3000 doses per test bull shall be stored till progeny test results of the bulls put to test are available.
- d. All female animals that are inseminated with test doses shall be identified with ear tags.
- e. All events of artificial insemination, pregnancy diagnosis and calving of dams shall be recorded through INAPH.
- f. All daughters born shall be identified with ear tags and followed up for growth.
- g. When daughters reach serviceable age, they shall be inseminated with semen from test bulls of future batches and later followed up for pregnancy and calving. All data

related to their AI, pregnancy diagnosis and calving would be recorded through INAPH.

- h. Milk production and milk components like fat, protein, lactose etc of all the daughters that calve would be recorded through INAPH once a month for a complete lactation.
- i. All daughters will be scored for Body conformation traits.
- j. Breeding values of bulls put under test and the milk recorded cows/buffaloes would be estimated.
- k. The semen doses of top progeny tested bulls (minimum 5 nos. different every year) shall be used for nominated mating of elite cows/buffaloes to produce the next generation of superior bull calves.
- l. The bull calves produced through nominated mating shall be procured after a preliminary selection and subject to meeting the standard protocols of parentage, health and in conformation with breed characteristics.
- m. Procured bull calves shall be first kept at a pre-quarantine or quarantine station depending on the age of procurement and later distributed to semen stations or shifted to a rearing station after successful completion of quarantine.
- n. The distribution and price of bulls and bull calves produced under the project would be decided by a Committee specially constituted for the purpose by DADF, GoI.
- o. If more than one PT programme is being implemented for a breed in different locations, it shall be ensured that some minimum number of daughters of each bull is produced under each of those programmes.

**Figure 2.1: A Schematic representation of the Technical programme for one project**





### **3. Standard Operating Procedures (SOPs), Minimum Standards and Evaluation procedure**

Refer to Standard Operating Procedures (SOPs) and Minimum Standards and Evaluation Procedures of DADF, dated 06 June 2012, provided at Appendix I.

### **4. Management of the Progeny Testing Programme**

#### **4.1. Project Management**

4.1.1. PT programmes are very long-term and high cost and are specialized jobs requiring high level of technical and professional skills and needing a strong field AI and quality semen production infrastructure and hence, could be entrusted to only select institutions having requisite experience and skills and financial resources.

4.1.2. The PT programmes for a specified breed of bulls would be implemented in a project mode in a select districts as per the Standard Operating Procedures (SOPs) and Minimum Standards of DADF, GoI.

4.1.3. The Project would be headed by a Project Coordinator and comprise minimum one District Coordinator for each district and one coordinator for the Calf Rearing Station. All these persons must possess the required professional qualifications and experience and should have undisturbed tenures.

4.1.4. The project would engage supervisors having the requisite skill set. 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. The services of the existing AI technicians of the selected AI

centres would be availed and the milk recorders would be engaged on job work basis.

#### **4.2. Management Committee**

4.2.1. The stakeholders – Registered Societies/Trusts (NGOs, Section 25 Companies)/State Cooperative Dairy Federations, District Cooperative Milk Producers Unions/ State Livestock Development Boards, Central Cattle Breeding Farms (CCBFs), Central Frozen Semen Production and Training Institute (CFSP & TI), PMU (located in NDDB) etc. - shall jointly have the responsibility for the execution and implementation of the project as per the approved Proposal and achieving the objectives and targets set for the project. This Project shall be treated as an autonomous independent Project with separate character for all purposes to be managed by a Management Committee and shall be executed and implemented through a Project Management Cell (PMC) to be constituted by the Management Committee. The Management Committee will comprise:

- a. CEO(s) of the EIA and other participating organisations
- b. The head of the participating Semen Station
- c. Project Coordinator, who shall be the Member Convener
- d. A minimum of one external subject matter specialist (to be nominated by PMU (located at NDDB))
- e. Other member(s) as may be required

4.2.2. The Committee, if it desires, may also call special invitees to attend the meeting. The general superintendence, direction, control and management of the affairs and activities of the Project shall vest in the Management Committee, which shall include preparing long term strategies, plans, taking policy

decisions related to project implementation including approval of budget, expenditure, re-appropriation of budget, reimbursement and release of advances, entering into contracts with agencies and other organizations, etc. The Management Committee shall ensure the effective implementation of the Project and that the objectives herein mentioned are achieved.

#### **4.3. Project Management Cell (PMC)**

- 4.3.1. The Project Management Cell shall execute and implement the project under the supervision, direction and control of the Management Committee. The Cell shall be headed by a Project Coordinator who shall be responsible for execution of the Project as per the Operational Manual and for achieving the objectives and targets given in the Proposal. The Project Coordinator shall be accountable to the Management Committee.

Other exclusive members of the PMC shall be:

- a. District Coordinators- One coordinator for each district/ 50-60 AI centres.
- b. Calf Rearing In-charge- one per project
- c. Administrative cum Account Assistant – one per project at the Project Coordinator’s office
- d. Data Entry Operators – one for each district/ 50-60 AI centres
- e. Supervisors – The number of supervisors shall depend on the number of villages a supervisor can supervise in a month, the work load and the distance between the villages.
- f. Select AI Technicians

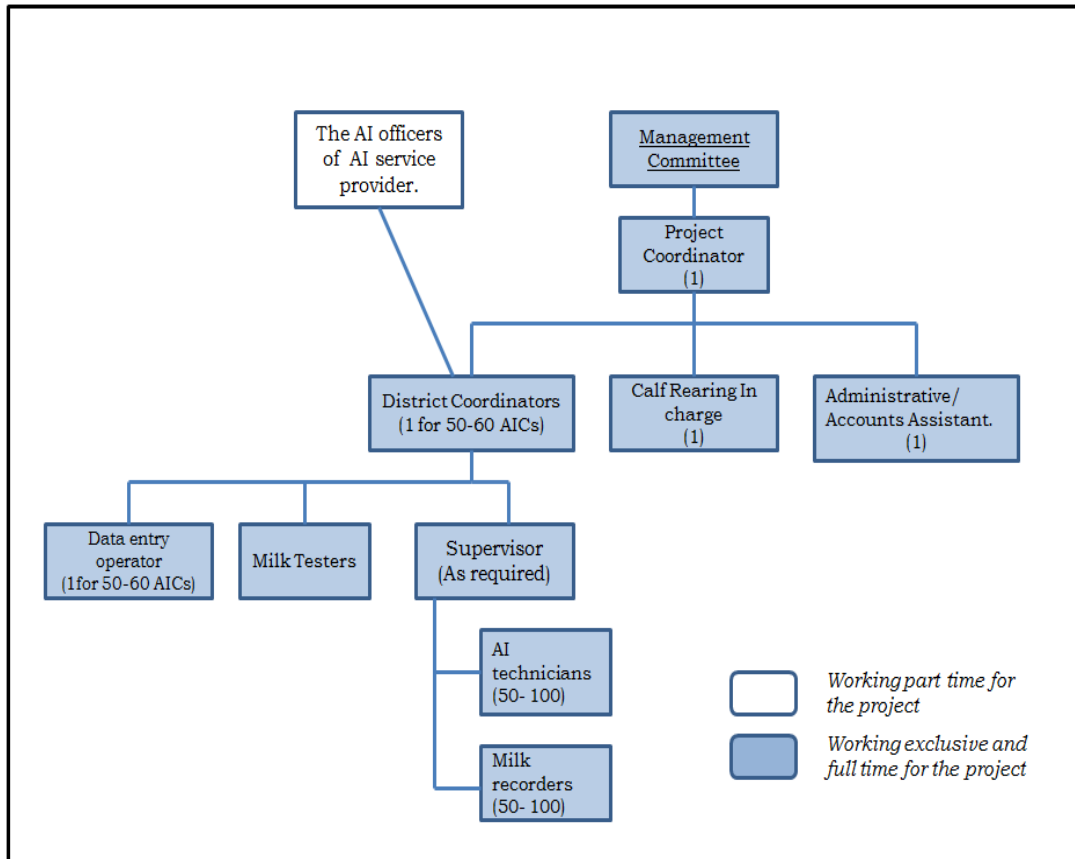
- g. Milk Testers – The number of testers will depend on the number of milk samples to be tested and logistical arrangement for collection of milk samples.
- h. Milk Recorders – A minimum of one per AI centre- Area assigned to one milk recorder would depend on the number of animals under milk recording and the spread of animals.

#### **4.4. Organogram of the Project Management Cell**

- 4.4.1. The District Coordinators, Calf Rearing In-charge and Administrative Cum Account assistant shall report to the Project Coordinator; Supervisors, Data Entry Operators and Milk Testers shall report to the District Coordinator; and Milk Recorders & MAITs will report to the respective Supervisors.
- The nominated AI officers of the service providers shall work in complete coordination with the District Coordinators. He/She shall provide logistical support to the respective District Coordinator in carrying out all AI operations and other project activities in the project villages to ensure that the project activities in the selected AI centres are implemented as per the approved proposal, and within the specified time frame.

4.4.2. The proposed Organogram of the project management cell is depicted in the following diagram.

**Figure 4.1 : Organogram of Project Management Cell**



#### 4.5. Roles and Responsibilities of the People involved in the PMC

4.5.1. Role and responsibility of each PMC member is given at **Annex I.**

#### 4.6. Roles and Responsibilities of the Institutions involved

4.6.1. A robust institutional arrangement is required for successful implementation of the Progeny Testing Programme. Various institutions that play a key role in the implementation of the programme are Registered Societies/Trusts (NGOs), Dairy Cooperative/State Livestock Development Boards providing

breeding / animal health / milk marketing services, PMU (located in NDDB) etc. Proper mapping of roles and responsibilities is required for each institution for smooth execution of the programme. Broad roles and responsibilities of each institution is given at **Annex II**.

## **5. Procurement Management**

- Procurement management practices to be followed by the EIA are described in the Procurement Manual, Vol. III of PIP.

## **6. Fund flow Mechanism and financial management**

- Fund flow mechanism and financial management practices to be followed by the EIA is described in the FM Handbook, Vol. II of PIP.

## **7. Project Monitoring and Evaluation**

### **7.1. General**

- 7.1.1. Each Project would be monitored and reviewed by a Management Committee (MC) half yearly. Project Coordinator would report to MC on all matters related to the project.
- 7.1.2. Project Management Cell would have its own mechanism of monitoring the project through District Coordinator and Supervisors.
- 7.1.3. PMC members would monitor and supervise the project through regular field visits, surprise checking of milk recording, cross checking of pregnancies and calving, verifying the reported information by crosschecking with actual events in villages, periodic review meetings with district coordinators.

- 7.1.4. The Milk recorder / MAIT visits each daughter born at an interval of six months to monitor its growth to ensure that it matures, gets pregnant and calves at an early age.
- 7.1.5. A mechanism for an independent periodic evaluation of each sub project would be as per the procedure of DADF.

## **7.2. Reporting**

- 7.2.1. Management action at various levels will be guided by the following reports:
- Bi-monthly report will be prepared and reviewed by the PMC members.
  - Six-monthly reports will be prepared in a standard format and will be provided to the PMC and PMU for performance review.
- 7.2.2. The six-monthly report submitted by EIA to the PMU will include:
- Up-to-date physical achievement and financial expenditure data compared to project targets;
  - Adherence of EIA to implementation procedures and processes;
  - Successes and problems encountered during the reporting period with suggested remedial actions;
  - Adherence to the environment & social management framework (ESMF) and problems encountered, if any.
  - any other reports as required from time to time by PMU

### **7.3. Management Information System (MIS)**

7.3.1. Each project will join “Information Network for Animal Productivity and Health (INAPH)” and use its application to collect data of all events as they happen, process them creating a central database and generate information for all stakeholders including farmers. The formats for capturing data have been given at **Annex III**.

7.3.2. INAPH is Windows based internet linked software. INAPH can be loaded in computers, laptops and netbooks. The data recorded through software would be stored in the centrally located production server of INAPH which is placed at NDDB, Anand. INAPH would be used to record the data of Animal Breeding. Main application loaded in laptops/desktop/netbooks/handheld devices would be used for monitoring data recording.

7.3.3. The main objective of the MIS is to facilitate results based management and ensure timely recommendations for improvements and course correction, as may be required. The process would include:

- Setting up a system for baseline data collection, analysis, generation of periodic reports, evaluation of the project and its different components/ activities
- System for baseline data collection, analysis, generation of periodic reports, evaluation of the project and its different components/ activities
- Setting up standardised learning and evaluation processes and dissemination of learning from development processes



#### **7.4. How transparency and accountability would be ensured?**

- 7.4.1. All performance data would be made available to all concerned officials through INAPH application with appropriate security mechanisms. Internal auditors would audit the accounts. All audit reports would be made available to all members of MC. The Management Committee will review and monitor the progress. All bull pricing and distribution decisions would be made in a transparent manner.
- 7.4.2. The method for estimating breeding values of the test bulls produced by adhering to the prescribed common approved protocols would be decided by a committee of experts to be constituted by the DADF. The DADF would appoint a separate committee to fix the charges for the bulls and arrange for the allocation of bulls to semen stations. Monitoring of bull production under the project will be carried out through the INAPH.

#### **7.5. Information Disclosure**

- 7.5.1. The EIA will have a website containing suo moto disclosures of the sub project related information, details of the activities, area(s) where the activities are being implemented, procurement plan etc,. It will also regularly post the progress of the project and the particulars of the person who may be contacted in the EIA for seeking further information.
- 7.5.2. Besides providing information on the website, the EIA will use other means of mass communication for dissemination of information such as display charts at the village level at appropriate locations, containing information that describes PT sub project activities in a simple and reader friendly manner.

## 7.6. Grievance Redressal Mechanism (GRM)

- 7.6.1. “A grievance would usually refer to some form of dissatisfaction by a stakeholder, which needs to be redressed in order to continue smooth implementation of the project”. The project will evolve a system for redressal of grievances that may arise in the course of implementation. The GRM will be structured in a manner so that it can be monitored, as it provides important feedback on the project activities.
- 7.6.2. The EIA would have a designated officer as ‘Grievance Redressal Officer’ (GRO) to deal with grievances. His contact number/ mailing IDs and address etc would have to be displayed on the web site of the EIA and at other relevant locations such as notice boards.
- 7.6.3. Each GRO would need to:
- Maintain a database of Grievances (*through a unique identification number*), acknowledgements and information about their disposal.
  - Monitor the progress of disposal of the grievances.
  - Fix time limit for disposal of the Grievances.
  - Deal with each Grievance in a fair manner.
  - Determine an appropriate periodicity when internal / external meetings would be held to implement the GRM in an efficient manner.
- 7.6.4. The procedure to be followed for grievance handling is given at **Annex IV**.

## **Glossary of terms**

Progeny Testing (PT)	: Selection of a bull for a trait on the performance of its progenies
Productivity	: Production per animal per day
Test Bull	: A Bull put under Progeny Test
Test AI	: AI using semen of a test bull carried out under PT programme
Body Typing	: Scoring daughters on their body conformation
Ear tag	: Plastic tag with a unique number, applied on the ear of the animal for its identification
Genotype	: Genetic makeup of an animal
Breeding Value	: Genetic value of an animal for a trait expressed as difference from population average
Nominated Mating	: Breeding of elite female animals with semen of top ranked proven bulls
Weaning	: Prevent a new born calf from suckling its mother

## **Annex I : Role and responsibility of each Project Management**

### **Cell member**

The job responsibilities of all officers of the Project are briefly described below:

#### **The Project Coordinator**

- Would be responsible for execution and implementation of the Project as per the Operational Manual and for achieving the objectives and targets given in the approved Plan through the PMC.
- Would be responsible for implementing all technical and administrative and financial functions of the project.
- Exercise proper financial control.
- Conduct monthly review meetings of all district level programmes.
- Arrange procurement and supply of consumables required for the project.
- Arrange to procure and store required semen doses for long storage from all the test bulls
- Submit required technical, and financial reports periodically
- Would monitor the calf rearing station and rearing of calves.
- Carry out any other function assigned to him by the Management Committee.

#### **The Administrative cum Accounts Assistant**

- He/She would be responsible for the maintenance of proper accounts.
- Assist the Project coordinator in preparation of FUC.
- Assist the Project coordinator in office related matters.

- Assist the project coordinator in inventory management of various items.

#### **District coordinator**

- Would be responsible for coordinating, supervising and monitoring all project activities and achieving the project targets within the given timeframe in his assigned district(s)
- Arrange monthly review meetings
- Would randomly check all activities
- Coordinate milk sample logistics
- Arrange for milk sample testing
- Arrange parentage testing of 10 % of daughters born
- Coordinate parentage testing, disease testing and procurement of male calves
- Arrange transportation of selected bull calves to quarantine station
- Maintain records & forward the required reports timely.
- Arrange timely data entry of all activities

#### **The AI Officer of AI service provider**

- Would provide logistical support to the District Coordinator for carrying out AI operations in project villages
- Would be responsible for all AI related activities such as distribution of test and proven bull semen doses as per the fixed schedule, uninterrupted supply of liquid nitrogen, and other AI consumables to all the project centres, ensure timely submission of reports by the AI technicians.
- Would provide logistical support to district coordinators in implementing vaccinations, disease screening, parentage confirmation tests etc. in project villages and arranging for the milk sample testing.

### **Data entry operator**

- Would be responsible for timely data entry using INAPH.
- Would ensure that all the data formats are received from all the AI technicians, milk recorders, supervisors etc.
- Would arrange to get the data corrected through the supervisors.
- In case of online data entry by AITs and MRS, the DEO would assist all the users for online data capturing and regular data synchronisation.

### **Milk Testers**

- Shall test all the milk samples from the milk recorders.
- Shall arrange to clean all the sample bottles
- Dispense required preservatives in the sample bottles
- Arrange dispatch of all the sample bottles to all the milk recorders
- Shall enter the milk component test results to the INAPH

### **Supervisors**

- Supervise a team of AI technicians and milk recorders.
- Conduct random checking of pregnancies and calvings.
- Check all registered female calves
- Check 30% male calves reported born
- Conduct surprise checking of 30 % of milk recordings
- Carry out typing of daughters in their first lactation
- Carry out random checking of fresh and subsequent body measurements
- Coordinate nominated services, and male calf production
- Arrange for timely recording and transmission of data formats to district coordinators.

- Should ensure 100% AI, pregnancy and calving follow-up by all AI technicians.
- Assist in screening of bull calves for diseases, correct parentage, genetic disorders, chromosomal aberrations etc. and their selection.
- Shall coordinate the logistics of the milk samples from their respective centres for testing.

#### **The Calf rearing In-charge**

- Responsible for quarantine and rearing of male calves following the standard protocols specified by the PMU.
- Ensure that the male calves procured by the project are quarantined, tested for various diseases during the quarantine period and culled/ transferred to rearing, as per the protocol specified by the PMU.
- Ensure that the calves that are finally selected for rearing are reared for the specified duration as per the protocol specified by the PMU.

#### **Mobile AI technicians**

- Carry out Test AI
- Ear tag all animals that are inseminated
- Follow-up all AIs for repeat AI, PD and Calving
- Ear tag and register all female calves born
- Take first body measurements of the female calves
- Maintain records and timely submission of reports
- Carry out nominated services and follow-up for PD and calving
- Ear tag all bull calves born out of nominated services.
- Assist the project to undertake vaccination programmes in the villages.

- Assist in screening of bull calves for diseases, correct parentage, genetic disorders, chromosomal aberrations etc. and their selection.

### **Milk Recorders**

- Follow-up female calves and take their body measurements once in 6 months up to calving, death or disposal whichever is earlier.
- Conduct monthly milk recordings as per milk recording schedule and following the protocols as per the SOP.
- Collecting, labelling and dispatching milk samples to laboratory for their testing.
- Maintain records and submit reports timely.



## **Annex II : Roles and Responsibilities of the Institutions involved**

### **End Implementing Agency (EIA)**

- a. The EIA shall submit to the PMU (located in NDDB) a Resolution from its Board resolving to collaborate with PMU (located in NDDB) to take up the project for “Bull Production through Progeny Testing of identified breed” and have jointly with PMU the overall responsibility for execution and implementation of the project and authorizing the Managing Director / CEO to sign documents including Grant Agreement on behalf of the EIA and thereby agreeing to bind itself with the terms and conditions of such agreement(s).
- b. The EIA shall provide all logistical support and assistance required by the PMC in carrying out the responsibilities entrusted to the PMC under the Grant Agreement.
- c. The EIA shall ensure that the Frozen Semen Station shall: (i) Procure the required number of mature bulls to be put under test in a timely manner as per the Standard Operating Procedures (SOPs) and Minimum standards; (ii) Carry out semen production complying with the Standard Operating Procedures (SOPs) and Minimum Standards; (iii) Make available the required test doses from the bulls put under test to designated AI service providers/ unions as per the supply schedule provided by the PMC and at prevailing prices as well as the required doses for long term storage, and (iv) Participate in the annual evaluation to be carried out by a review committee constituted by PMU (located in NDDB).
- d. The EIA shall coordinate with the State Government and the milk unions to assist the PMC to get all animals in the selected villages vaccinated against HS, BQ, FMD and Brucellosis.

- e. The EIA shall provide its existing facilities for pre-quarantine, quarantine and rearing to the project for the male calves produced through nominated mating or create such facilities at a suitable location and the project shall fund for strengthening the facilities if required.
- f. The EIA shall provide suitable office premises for the PMC.
- g. The EIA shall also ensure the following:
  - Use of test doses from only the specified bulls in the villages selected for implementing the project.
  - Include animals of the project villages under the programme irrespective of the affiliation of their owners to different institutions.
  - Extend the necessary logistical support to the PMC in screening of male calves (produced through nominated mating) for diseases, genetic disorders and chromosomal aberrations and parentage verification of selected male and female calves and in procuring selected male calves born through nominated mating.

### **State Government**

- a. Ensure vaccination of livestock against FMD, HS, BQ, and Brucellosis in the villages selected to implement the Project.
- b. The semen of the bull under test will be supplied to the AI centres of the Government in the project villages as per the terms and conditions applicable to other AI centres under the project.
- c. Provide available quarantine and rearing facilities for male calves procured under the project, if requested by the PMC.
- d. Arrange castration of all scrub bulls in the project villages.

- e. Provide all necessary help and assistance for effective implementation of the project.

**PMU (located at NDDB)**

- a. PMU shall provide the necessary funds required for the project as per the recommendation of the Project Management Committee. PMU shall also render all technical advice required for effective implementation of the Project. However, the obligation of PMU to provide financial assistance to the Project as envisaged in the Grant Agreement shall be contingent upon and would be subject to EIA and the State Government fulfilling their obligations.
- b. It shall periodically carryout breeding value estimation of bulls and bull mothers and arrange the evaluation of the project on a periodic basis. Create a database on production and productivity of cattle and use it for developing appropriate production enhancement strategies.
- c. It shall constitute a Review Committee comprising a representative each from state government, partnering institution, PMU and at least one external expert selected by PMU (located at NDDB) to review the progress of the project annually. Based on the recommendations of the said Committee, the PMU shall be free to take appropriate actions from time to time including but not restricted to stop further funding for the Project.



### Annex III : INAPH data entry formats

**Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project**

**TO1**

### ANIMAL REGISTRATION

**AI Technician Name:** \_\_\_\_\_

**Month**      **Year**  
**Date:**

<b>Animal Details</b>		8. Registering Orgn. <input style="width: 100%;" type="text"/>	
1. *Tag number <input style="width: 100%;" type="text"/>		9. Sire ID <input style="width: 100%;" type="text"/>	
2. *Animal Movement <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		10. Dam ID <input style="width: 100%;" type="text"/>	
3. *Species <input type="checkbox"/> Cattle <input type="checkbox"/> Buffalo		11. Sire's Sire ID <input style="width: 100%;" type="text"/>	
4. *Breed Name <input style="width: 100%;" type="text"/>		12. Dam's Sire ID <input style="width: 100%;" type="text"/>	
	<input style="width: 100%;" type="text"/>	13. Number of Calving <input style="width: 100%;" type="text"/>	
	<input style="width: 100%;" type="text"/>	14. Last Calving Date <input style="width: 100%;" type="text"/>	
5. *Registration Date <input style="width: 100%;" type="text"/> dd/mm/yyyy		(dd/mm/yyyy)	
6. *Age <input type="checkbox"/> Yrs <input type="checkbox"/> Months		15. *Pregnant <input type="checkbox"/> Yes <input type="checkbox"/> No	
7. *Date of Birth <input style="width: 100%;" type="text"/>		16. *Pregnancy Months <input style="width: 100%;" type="text"/>	
(dd/mm/yyyy)		17. *Milking Status <input type="checkbox"/> In Milk <input type="checkbox"/> Dry	
<b>Owner Details</b>		<b>Previous owner Details</b>	
18. *Village Name <input style="width: 100%;" type="text"/>	23. Village Institution Name <input style="width: 100%;" type="text"/>	27. Name <input style="width: 100%;" type="text"/>	
19. *Owner New <input type="checkbox"/> Existing <input type="checkbox"/>	23. Farmer Association No <input style="width: 100%;" type="text"/>	28. State <input style="width: 100%;" type="text"/>	
20. *Owner's Name along with Father's <input style="width: 100%;" type="text"/>	24. Below Poverty Line <input type="checkbox"/> Yes <input type="checkbox"/> No	29. District <input style="width: 100%;" type="text"/>	
21. *Date of Birth <input style="width: 100%;" type="text"/> dd/mm/yyyy	24. Below Poverty Line (3 or 4 digits)	30. Taluka <input style="width: 100%;" type="text"/>	
22. Affiliated Agency <input style="width: 100%;" type="text"/>	26. Landline Number <input style="width: 100%;" type="text"/>	31. Village <input style="width: 100%;" type="text"/>	
	(with STD code)	32. Remarks <input style="width: 100%;" type="text"/>	
		33. Price <input style="width: 100%;" type="text"/>	
<b>Location Details</b>			
34. Hamlet <input style="width: 100%;" type="text"/>		36. District <input style="width: 100%;" type="text"/>	
35. Tehsil <input style="width: 100%;" type="text"/>		37. State <input style="width: 100%;" type="text"/>	
<b>Fields Marked with * are Mandatory</b>			

**Signature**

Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project  
**ARTIFICIAL INSEMINATION (AI), PREGNANCY DIAGNOSIS (PD) & CALVING**

T02-03-04

AI Technician Name : \_\_\_\_\_  
District : \_\_\_\_\_

Month : \_\_\_\_\_ Year : \_\_\_\_\_  
State : \_\_\_\_\_

S N o	*Tag Number	Artificial Insemination (T02)					Preg. Disgnosis (T03)			Calving (T04)								Owner's Name	Village Name
		*AI Date dd-mm- yyyy	*Semen/ Bull Number	Batch #	Nom - AI? (Tick if Yes)	Amount	*PD Date (dd-mm- yyyy)	*PD Result (Preg./ Non- Preg.)	NS/ Other service provider ?	*Calving Date (dd-mm-yyyy)	*Ease of calvin g <sup>1</sup>	*Calvi ng type <sup>2</sup>	*Tag Number Calf-1 / Calf -2	*Sex (M/ F)	*Wei ght (Kg.)	Calf's Orgn.	Conge nital Defect s		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
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**T02 Signature**

**T03 Signature**

**T04 Signature**

Fields Marked with \* are Mandatory

Listings for Ease of calving and Calving type have been provided below for reference

<sup>1</sup>For Ease of Calving, mark "N" - Normal, "SP" - Slight Pull, "HP" - Heavy Pull and "D" for Distocia

<sup>2</sup>For Calving type, mark "SB"-Still Birth, "TM"-Twin Male, "TF"-Twin Female, "TMF"-Twin Male Female, "AB"-Abortion, "M"-Single Male, "F"-Single Female

**Information Network for Animal Productivity and Health ( INAPH )**  
**Progeny Testing Project**  
**MILK RECORDING (MR)**

**T05-05A**

Milk Recorder Name : \_\_\_\_\_ Testing Laboratory : \_\_\_\_\_ Month : \_\_\_\_\_ Year : \_\_\_\_\_  
 District : \_\_\_\_\_ State : \_\_\_\_\_

Sn o	*Tag Number	Milk recording (T05)						Milk Components testing (T05A)						Village Name	Owner's Name	Remark s
		*Statu s Milk (M) / Dry-off (D)	*Recordi ng Date (dd-mm- yy)	Milk Production		*Sampl e Box No	*Bottle No	Fat %	Protei n %	SNF %	Lactos e %	SCC (*000s )	MUN (mg.)			
				*Morni ng	*Eveni ng											
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
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T05 Signature

T05A Signature

**Fields Marked with \* are Mandatory**

For Generic, mark "S" - Suckling, "SCM" - Sub-Clinical Mastitis, "HP" - Hoof Problem, "DW" - De-  
 Wormed, "FMW" - Feeding Mineral Mixire, "CA"-Calf Alive

For vaccine, mark BQ, HS, FMD, "A" - Anthrax, "B" - Brucella, "T" - Theileria

**Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project**

**T06**

**ANIMAL Re-REGISTRATION**

**AI Technician Name:** \_\_\_\_\_

**Month**                      **Year**  
**Date:**

<b>Animal Details</b>		4. Registering Orgn.	<input type="text"/>
1. *Tag number	<input type="text"/>	5. Number of Calving	<input type="text"/>
2. *Animal Movement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. Last Calving Date (dd/mm/yyyy)	<input type="text"/>
3. *Re-Registration Date	<input type="text"/> dd/mm/yyyy	7. *Pregnant	<input type="checkbox"/> Yes <input type="checkbox"/> No
		8. *Pregnancy Months	<input type="text"/>
		9. *Milking Status	<input type="checkbox"/> In Milk <input type="checkbox"/> Dry
<b>Owner Details</b>		<b>Previous owner Details</b>	
10. *Village Name	<input type="text"/>	15. Village Institution Name	<input type="text"/>
11. *Owner	New <input type="checkbox"/> Existing <input type="checkbox"/>	16. Farmer Association No	<input type="text"/>
12. *Owner's Name along with Father's	<input type="text"/>	17. Below Poverty Line	<input type="checkbox"/> Yes
13. *Date of Birth	<input type="text"/> dd/mm/yyyy	18. Mobile Number (11 digits)	<input type="text"/>
14. Affiliated Agency	<input type="text"/>	19. Landline Number (with STD code)	<input type="text"/>
		20. Name	<input type="text"/>
		21. State	<input type="text"/>
		22. District	<input type="text"/>
		23. Taluka	<input type="text"/>
		24. Village	<input type="text"/>
		25. Remarks	<input type="text"/>
		26. Price	<input type="text"/>
<b>Location Details</b>		29. District	<input type="text"/>
27. Hamlet	<input type="text"/>	30. State	<input type="text"/>
28. Tehsil	<input type="text"/>		
<b>Fields Marked with * are Mandatory</b>			

**Signature**



**Information Network for Animal Productivity and Health ( INAPH )**  
**Progeny Testing Project**  
**ANIMAL MOVEMENT**

**T07**

**Inseminator Name :** \_\_\_\_\_  
**District :** \_\_\_\_\_

**Month :** \_\_\_\_\_ **Year :** \_\_\_\_\_  
**State :** \_\_\_\_\_

Sr. No.	Date of Recording (dd-mm-yyyy)	*Tag Number	*Movement Date (dd-mm-yyyy)	*Movement Type	Amount (Rs.)	Name of Purchaser	State	District	Taluka	Village	* Semen Station Name	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
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**Fields marked with \* are mandatory**

For Movement Type, Mark "D" for Death, "S" for Sold, "C" for Culled, "T" for Transferred

**Signature**

**Information Network for Animal Productivity and Health ( INAPH )**  
**Progeny Testing Project**  
**EAR TAG CHANGE**

**TOS**

**Inseminator Name :** \_\_\_\_\_

**Month :** \_\_\_\_\_ **Year :** \_\_\_\_\_

**District :** \_\_\_\_\_

**State :** \_\_\_\_\_

<b>Sr. No.</b>	<b>*Transaction Date</b> (dd-mm-yyyy)	<b>* Old Tag Number</b>	<b>* New Tag Number</b>	<b>Owner's Name</b>	<b>Village Name</b>	<b>Remarks</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
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**Fields marked with \* are mandatory**

**Signature**

**Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project**

**T09**

**FIRST BODY MEASUREMENT (FBM) OF DAUGHTERS**

**AI Technician Name :** \_\_\_\_\_

**Month :** \_\_\_ **Year :** \_\_\_\_\_

**AI centre Name:** \_\_\_\_\_

**District:** \_\_\_\_\_

**State :** \_\_\_\_\_

<b>Sr. No.</b>	<b>* FB Measurement Date (dd-mm-yy)</b>	<b>* Animal Tag No.</b>	<b>Date of Birth (dd-mm-yy)</b>	<b>Owner's Name</b>	<b>Village Name</b>	<b>* Heart Girth (G) inches</b>	<b>* Body Length (L) inches</b>	<b>Estimated body weight (Kg.)</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>
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**Fields marked with \* are mandatory**

**Signature**

Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project  
**SUBSEQUENT BODY MEASUREMENT (SBM) OF DAUGHTERS**

**T10**

Month : \_\_\_\_\_  
Year : \_\_\_\_\_

AI Technician Name : \_\_\_\_\_ District: \_\_\_\_\_ State : \_\_\_\_\_

AI centre Name: \_\_\_\_\_

Sr. No.	SBM No.	*SB Measurement Date (dd-mm-yy)	* Animal Tag No.	Date of Birth (dd-mm-yy)	Owner's Name	Village Name	* Heart Girth (G) inches	* Body Length (L) inches	Estimated body weight (Kg.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
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Fields marked with \* are mandatory

Signature \_\_\_\_\_

**Information Network for Animal Productivity and Health ( INAPH )  
Progeny Testing Project**

**MILK RECORDING SCHEDULE**

**T11**

**MR Name :** \_\_\_\_\_ **Month :** \_\_\_\_\_ **Year :** \_\_\_\_\_

**Centre Name:** \_\_\_\_\_ **District :** \_\_\_\_\_ **State :** \_\_\_\_\_

Sr. No.	* Animal Tag No.	Rec. No.	Rec. Date (dd)	Recording Time			Farmer Name & Address
				Morning	Noon	Evening	
				hh:mm	hh:mm	hh:mm	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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15							

**Date:** \_\_\_\_\_

**Signature of District Coordinator**

**Progeny Testing Project**  
**MILK RECORDING CARD (T12)**

Animal Number: \_\_\_\_\_

**Sire NO.**

Type of Animal: Superior/ Elite/ Daughter/ Other

Breed: \_\_\_\_\_

Lactation No.

Calving Date: \_\_\_\_\_

Owner name: \_\_\_\_\_

Taluka: \_\_\_\_\_ Village: \_\_\_\_\_

Hamlet: \_\_\_\_\_

Rec. No.	Date	Milk Yield (lit.)			Tick if applicable			Supervisor Sign.
		Morn.	Noon	Even.	Suckling	Mastitis	One Time	
1								
2								
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Date of drying: \_\_\_\_\_

Standard Lactation Yield: \_\_\_\_\_

Completed Lactation Incentive Given:

Amount (Rs.) \_\_\_\_\_ on \_\_\_\_\_

**Information Network for Animal Productivity and Health ( INAPH )**  
**Progeny Testing Project**  
**MISCELLANEOUS SERVICES**

**Inseminator Name :** \_\_\_\_\_  
**District :** \_\_\_\_\_

**Month :** \_\_\_\_\_ **Year :** \_\_\_\_\_  
**State :** \_\_\_\_\_

Sr. No.	*Transaction date (dd-mm-yyyy)	*Village Name	*Owner's Name	*Owner's Date of Birth (dd-mm-yyyy)	*Item Name	*Unit price (Rs.)	*Total Quantity Sold	*Total Amount (Rs.)	*Receipt No.	Remarks / (Any Ear Tag No.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
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**Fields Marked with \* are Mandatory**

**Signature**





## **Annex IV : Grievance Redressal Mechanism under NDP I**

For addressing grievances arising under NDP I, following grievance redressal mechanism can be adopted.

### **Appointment of Grievance Redressal Officer**

1. The EIA under NDP I shall designate an officer as ‘Grievance Redressal Officer’ (GRO) to deal with all matters relating to grievances.
2. The EIA should display at a prominent place/ notice board the name of GRO with location, contact numbers/ mailing IDs and address along with the specific visiting hours for hearing / receiving the grievances.

### **Grievance/Complaint Submission:**

1. While complaint is made, it can either be made orally or in writing:
  - The name of the individual or organization, address and telephone number (if any) of the complainant.
  - A brief description of the matter which is the source of the grievance, including copies of any relevant and supporting documents.
  - Relief sought
2. Grievances may also be submitted in the Complaint Box kept at reception of the office of the EIA. The Complaint Box should be opened on daily basis by the GRO. Complaint can also be sent by post.
3. A complaint made through electronic means (e-mail, fax) should also be accepted and replied, if requested, should be sent through e- mail also.
4. In case the complainant is not satisfied with the response at a certain level, He/She will be free to approach the next level.

### **Grievance Redressal Procedure:**

1. Every application received should be tagged with any kind of reference number. The grievance system should be continuous for the whole year.
2. Every application or petition should be acknowledged through standard acknowledgement slips or a copy of the receipt which should be dispatched to the complainant within 3 days of receipt of complaint or handed over to person at the time of receipt for complaints submitted in person.
3. Every application should carry such a slip for future reference indicating the name, designation and telephone number of the official who is processing the case. The time frame in which a reply will be sent should also be indicated.
4. The complainant should be quickly informed of the action taken by way of redressal within proposed response time.
5. A record of all complaints received and action taken till disposal should be maintained.
6. A reply to any grievance must cover all points raised and not address the grievance partially. If there is any follow-up action, it must be pursued.
7. No grievance is to be rejected without having been independently examined. At a minimum, this means that an officer superior, to the one who delayed taking the original decision or took the original decision that is cause for grievance, should actually examine the case as well as the reply, intended to be sent to the complainant. If a complaint is rejected, the reasons for such rejection must be made explicit and should be intimated to the complainant within the time frame.
8. Grievance redressal mechanisms will consider the vulnerability of gender, Scheduled Caste/Scheduled Tribe and other vulnerable populations.

**Appendix I :**

**Standard Operating Procedures (SOP),  
Minimum Standards (MS)  
and  
Evaluation Procedure  
for implementing  
Progeny Testing (PT) programme  
for  
Cattle and Buffalo**

May, 2012



# **Standard Operating Procedures (SOP), Minimum Standards (MS) and Evaluation Procedure for implementing a Progeny Testing (PT) programme for Cattle and Buffalo**

## **Foreword**

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 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. 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.

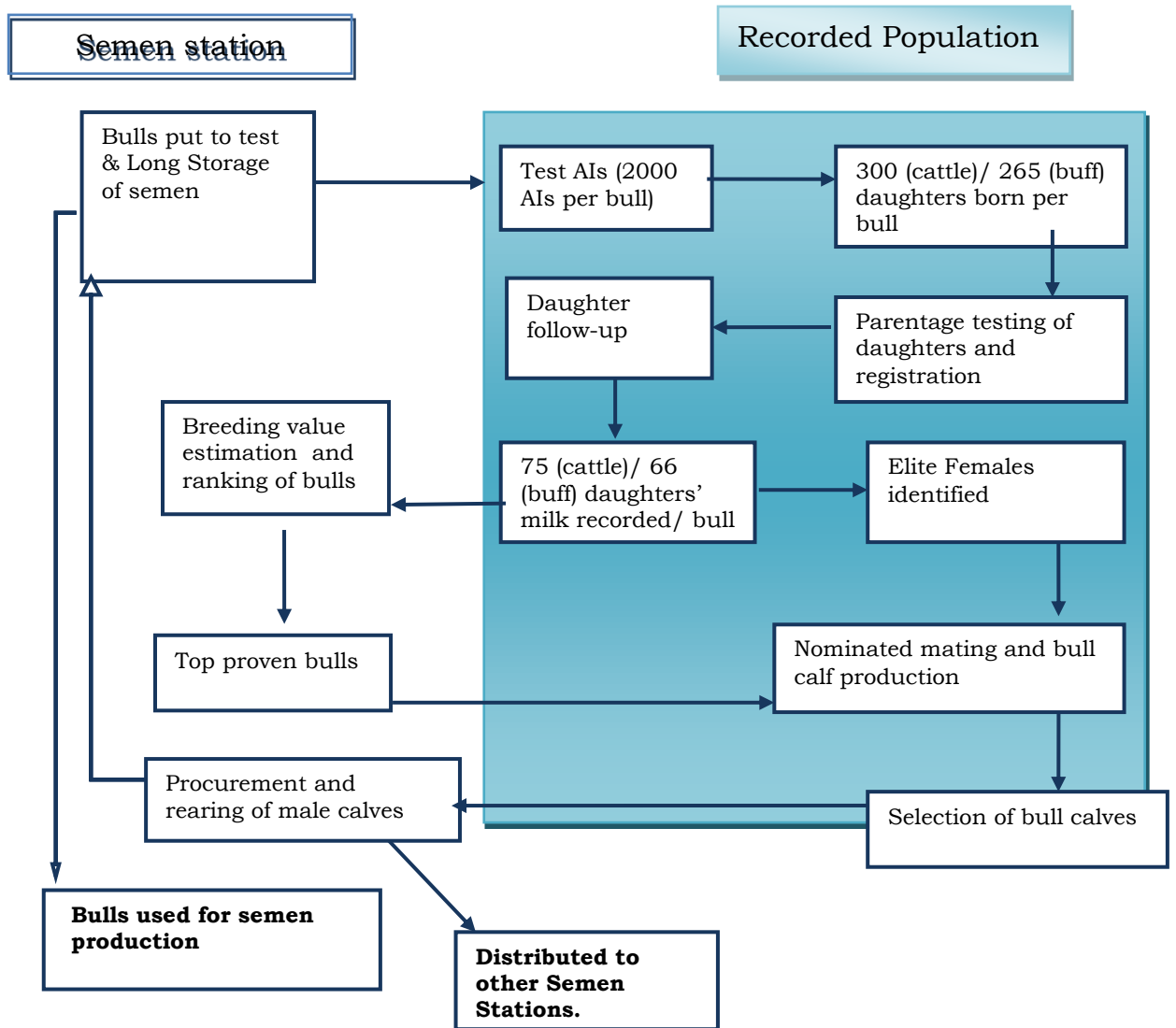
## **Objectives of the Programme**

The main objectives of the Progeny Testing Programme are:

- To produce the required high genetic merit bulls for semen stations through progeny testing
- To achieve a steady genetic progress in the buffaloes or cattle population for milk, fat and protein yield and type characters in the villages where the progeny testing programme is implemented

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

**Figure 1: A Schematic representation of a progeny testing programme**



## **Standard Operating Procedures (SOP), Minimum Standards and Evaluation procedure**

### **A. Standard Operating Procedures (SOP)**

#### **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 DADF, 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 mating preferably after producing a minimum of 5000 doses – 2000 for test mating and 3000 for long term storage.

The test doses should be produced at a Semen Station graded ‘A’ or ‘B’ by CMU, DADF, GOI. The number of bulls put under test shall be raised from minimum of 20 to start with and increased to minimum 40 within five years.

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 DADF, GOI, shall be procured from other grade ‘A’ or ‘B’ semen stations.

#### **Animal Identification**

All female animals that are inseminated with test doses, all daughters that are born under the project and all male calves that are born out of nominated mating shall be identified by applying ear tags.

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

**Figure A.1: Ear Tag**



**Figure A.2: Tag Applicator**



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

The ear tag shall be applied inside the ear of animals, in the center of the ear lobe with the female part of the tag inside the ear.



### **Figure A.3: Ear Tagged animal**



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

### **Test Inseminations**

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.

Test insemination period for a bull should be between 12-18 months.

If different PT programmes for a breed in different locations are sharing their bulls, test doses and long term storage doses of each bull should be equally shared (a minimum of 200 doses per bull) among all the programmes so that daughters of each bull are produced in all the locations

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

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.

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, the animals will be examined for pregnancy after 90 days of AI and then followed for calving.

### **Daughters' Registration**

Upon 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.

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

### **Parentage verification**

Records of all daughters or male calves born of nominated mating, 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.

A blood sample of randomly selected 10% of the daughters born under each AI centre and all male calves born out of nominated mating should be collected for parentage confirmation.

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

### **Follow up of Daughters**

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.

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, de-worming every six months, and vaccination of all female calves between 4-8 months of age in the project villages for brucellosis

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.

It is also proposed to conduct calf rallies in the project area.

### **Recording for body measurements of daughters**

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.

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.

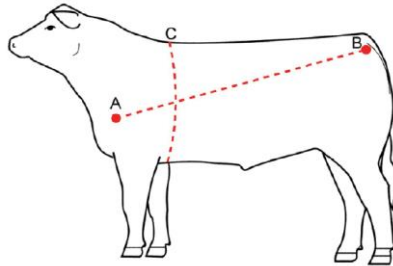
Body length of calf means measurement in inches between point of shoulder and pin bone.

Heart girth means circumference of thorax at the point of elbow.

Body weight is calculated using the following formula:

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

**Figure A.4: Measurement of Body Dimensions**



### **Milk Recording**

The key points to be considered for milk recording include:

- a. 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.
- b. An area assigned to one milk recorder would depend on the number of animals under milk recording and the spread of animals. A milk recorder shall not do milk recording of more than 5 animals per day.
- c. First recording should be carried out on or after 5 days of calving and not later than 25 days of calving.
- d. Milk recording for an animal should be done once a month, morning and evening and 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.
- e. A monthly milk recording schedule shall be prepared, detailing the animal to be recorded, order of recording, address of the farmer, name of the village, date and time of recording.

- f. Milk recording should be carried out using a transparent calibrated plastic jar with a sensitivity of 100 cc or using an accurate calibrated weighing machine.

**Figure A.5: Calibrated Plastic Jug.**



- g. 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, protein, lactose etc.
- h. 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.
- i. If the animal becomes dry, the dry date should be recorded invariably.
- j. 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. Milk collected from all four quarters should be measured and the farmer should be advised to feed the calf separately.
- k. Milk yield should not be recorded on the day when it has dropped by 50% of the previous 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.

1. If the animal gives milk only one time, then only that should be recorded and the other timing should be left blank.
- m. The milk recorder shall also record the details of the recorded yield in a milk recording card that is kept with the animal owner.
- n. Standard Lactation Yield of the milk recorded animal should be calculated using the Test Interval Method (A4) described at Section 2.1.5.1 of the International Agreement of Recording Practices published by International Committee for Animal Recording (ICAR).

### **Procedures for supervision**

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

- a. One 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.
- b. Supervisors should preferably be matriculate with skill in AI operations.
- c. 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 mating and at least 30% of randomly selected milk recordings, subsequent body measurements, pregnancy results etc. in his assigned villages. He should submit a tour diary every month.

- d. For checking the milk recordings, the supervisor should conduct 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. 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.
- e. In addition to supervisors, activities should also be supervised and monitored by other officers through regular and surprise field visits, bimonthly review meetings, AITs review meetings etc.

### **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 supervisors who are trained in body typing of animals. The trained supervisors should type and score the daughters during the peak phase of first lactation. The type traits that may be measured are: stature, chest width, body depth, angularity, rump angle, rump width, rear legs set, rear legs rear view, foot angle, fore udder attachment, rear udder height, central ligament, udder depth, teat placement rear view, teat length, and rear udder attachment. A methodology for body conformation trait measurement for our breeds and breed combinations is being standardized.

### **Breeding Value estimation and Nominated mating**

- a. Breeding value of bulls and milk recorded cows/ buffaloes should be estimated using all recorded data obtained through INAPH. Procedures for estimation of breeding values will be decided by an independent six members expert team constituted by DADF

representing GoI, ICAR, SIAs/SLBs, Cooperatives, NDDB, NGOs and Universities.

- b. Actual computation of breeding values shall be done using NDDB's computing facilities every four months using all recorded data obtained through INAPH. Breeding values would be published by the above-mentioned Independent Expert Team.
- c. If more than one PT programme is being implemented for a breed in different locations, it shall be ensured that some minimum number of daughters of each bull is produced under each of those programmes. In this case, test doses and long term storage doses of each bull shall be shared among all the programmes so that daughters of each bull are produced in all the locations. Not more than Top 10% of the bulls within each breed (minimum five different bulls every year) should be used for nominated mating to produce young bulls to be put under test in next cycle for all the PT programmes meant for that particular breed.
- d. It should be ensured that only the semen from not more than top 10% (minimum five different bulls every year) of proven bulls should be used for nominated mating.

During the initial few years of the projects, when proven bulls from the project are not available, semen of proven bulls available with other agencies or imported semen of progeny tested bulls could be used. If semen of proven bulls is not at all available, then bulls whose dam's milk yield is 20% 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 DADF, GOI should be used for nominated mating.

- e. Top 10% females declared elite based on breeding values shall be used for nominated mating. In absence of BV, females qualifying "Standards of Genetic Merit of Breeding bulls" as specified in the



Minimum Standards for Production of Bovine Frozen Semen prescribed by DADF, GOI shall be selected for nominated mating, to produce superior male calves.

- f. The elite cow/buffalo list shall be generated, updated and circulated every four months.

### **Male Calf Procurement**

The points to be kept in mind in procurement of male calves include:

- a. The male calves produced out of nominated mating should be procured at the earliest possible to avoid loss of this superior germplasm
- b. A price decided by the organisation should be paid to the owner for a healthy male calf.
- c. It should be ensured that all the procured bull calves have a confirmed parentage that has been confirmed using DNA markers and it should be ensured that the bull calves conform to the breed characteristics and are free from any physical and congenital abnormalities.
- d. It should also be ensured that the bull calves and their mothers are free from TB, JD and Brucellosis. TB and JD to be tested by Single Intradermal Test (SIT) and Brucellosis by ELISA.

### **Rearing of Male calves**

The following points to be considered while rearing of male calves:

- a. The calves produced in the project villages should be procured and quarantined at a quarantine station.
- b. All male calves procured before the age of 3 months should be brought to a pre-quarantine station and kept there at least up to their attainment of 3 months of age. The male calves should be

tested for diseases and only the ones tested free for TB, JD and Brucellosis should be transferred to the quarantine station.

- c. Male calves procured after the age of 3 months should be brought to the quarantine station. It shall also be ensured that the bull calves have a confirmed parentage that has been confirmed using DNA markers and the calves and their mothers are free from TB, JD and Brucellosis. TB and JD to be tested by Single Intradermal Test (SIT) and Brucellosis by ELISA.
- d. Male calves would be tested for TB, JD and Brucellosis during quarantine and only after successful completion of quarantine, the calves could be either distributed to various semen stations or reared in a separate calf rearing station and then distributed to various semen stations.

### **Information System**

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.

### **B. Minimum Standards to be achieved**

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

- a. It would be ensured that annually minimum 20 bulls would be put to test for each breed/ genetic group. However, efforts would be made to put as many bulls as possible under test. This number would be raised to at least 40 over a period of 5 years.

- 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 DADF, GOI.
- c. The test doses should have been produced only at a Semen Station graded ‘A’ or ‘B’ by the Central Monitoring Unit (CMU), DADF, 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 complete first lactation records of minimum 30 daughters per bull spread over a minimum of 5 villages are available.
- 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. For the proven bulls that are used for the nominated mating programme for production of bulls, the reliability of their breeding values shall not be less than 75%.
- i. It would be ensured that only the semen from not more than top 10% (minimum five) of proven bulls would be used for nominated mating. However, during the initial few years of the projects, during which proven bulls from the project are not available, semen of proven bulls available with other agencies or imported semen of progeny tested bulls could be used. If semen of proven

bulls is not at all available, then bulls whose dam's milk yield is more than 20% of the yield specified in the "Standards of Genetic Merit of Breeding bulls" in the Minimum Standards for Production of Bovine Frozen Semen, prescribed by DADF, GOI should be used for nominated mating.

- j. It would be ensured that not more than Top 10% females declared elite based on breeding values and conforming to breed characters shall be used for nominated mating. In absence of BV, females qualifying "Standards of Genetic Merit of Breeding bulls" as specified in the "Minimum Standards for Production of Bovine Frozen Semen" prescribed by DADF, GOI shall be selected for nominated mating, to produce superior male calves.
- k. All bull calves selected through nominated mating shall have confirmed parentage through DNA testing.
- l. Both bull calves that are procured and their dams shall be free from TB, JD, Brucellosis, and any physical deformities.

### **C. Evaluation of the project**

#### **General:**

- a. The evaluation would be done by a committee (minimum of 4 members) constituted by the Management Committee of the respective programme.
- b. All the committee members would reach the district on the previous day of the scheduled dates (at least 2 full days) of evaluation.
- c. A minimum of 3 committee members should be available.
- d. Each member of the committee should score agency level and field level activities (check list No.1.1, 1.2 and 2.1) and submit the

score sheets to chairman for overall score (average of all the score sheets).

e. The evaluation of the programme will be done in two phases

Phase 1: Surprise milk recording validation by committee

Phase 2: Qualitative evaluation of activities of the programme

## **Phase 1**

### **1.1. Surprise milk recording validation:**

- The Evaluation Committee (EC) will obtain from the District Coordinator/ Project Coordinator the advance milk recording schedule for the particular month in which the Committee visit is scheduled.
- The EC randomly decides the three milk recording centres and three farmers whose animals are scheduled to be milk recorded by the respective Milk Recorders (MRs) on that date. The committee divides into three teams and each team makes surprise visit to each of the selected village during morning hours. The procedure of recording by the MR is checked as per the **Check List 1.1**.

### **1.2. Qualitative evaluation of the programme activities at Agency level**

- Activities mentioned in the checklist 1.2 should be evaluated by the committee at the Agency level.

## **Phase 2:**

### **2.1. Qualitative Evaluation of activities at field level**

- For selecting the village, initially select three supervisors from the Project at random and one AI Centre at random from each supervisor. From the selected AI centres, the committee will select one village each.

- Activities mentioned in checklist 2.1 will be used at village level for evaluating the field related activities in all the three selected villages.
- Fill Sl. No 2, 4 and 8 from information available at AI centre/ INAPH
- Fill Sl. No 1, 3, 5, 6 and 7 at households/Farms.

**Checklist 1.1: Surprise milk recording check (Total Marks 50) in 3 separate milk recording centres**

**Farmer Name:** \_\_\_\_\_ **Milk recorder's name:** \_\_\_\_\_

**ID of Animal under Milk Recording:** \_\_\_\_\_

<b>Sr. No.</b>	<b>Item description</b>	<b>Answer</b>	<b>Marks assigned</b>	<b>Marks obtained</b>
1	Milk recorder reached the household before/ at the time/ after the farmer started milking the animal	Before/ during/ after	7/ 5/ 2	
2	Animal under Milk recording is ear tagged	Yes / No	4/0	
3	Ear tag number matches with the tag number in Milk Recording Register/ PDA	Yes / No	5/0	
3	Milk recorder is carrying Milk recording register/PDA	Yes / No	2/0	
4	The milk recording Register/card is updated till the previous day/ data has been entered in PDA.		On 4-0 scale	
5	Milk recorder is carrying apparently clean Measuring Jar		On 4/0 scale	
6	Pen/ pencil available with the MR at the time of milk recording	Yes / No	2/0	
7	Milk recorder is carrying Sampling bottles	Yes / No	3/0	
8	Milk Recording card is present at farmer's house.	Yes / No	2/0	
9	Milk recording card with farmer is updated and filled up to date.		On 2-0 scale	
10	Measuring is accurate		On 3-0 scale	
11	Sample was collected after proper mixing of the milk.	Yes / No	2/0	
12	Sample bottle was properly labelled.	Yes / No	2/0	
13	Calf was <b>not</b> allowed to suckle? (Suckling only for milk letdown should be allowed)	Yes / No	3/0	
14	Awareness of MR about PT activities		On 5-0 Scale	
		<b>Total</b>	<b>50</b>	

*If the milk recorder didn't turn-up for recording then zero mark is allotted for the whole session*

**Checklist 1.2: Qualitative evaluation of the programme activities at Agency level (Total 50 marks)**

Sl. No	Item	Criteria	Marks assigned	Marks obtained
1	Exclusivity of the officers assigned by Agency to the project	Exclusive with no other responsibilities	10	
		Exclusive but looks after some specific assignments in addition to the PTP work like attending infertility camps, health care programme etc. in PT area.	5	
		Looks after additional work allotted by the management from time to time in other than PT Area	0	
2	Data Entry in INAPH (crosscheck any of the recent formats/registers with the transaction list)	Is updated till the last date of previous month for all centres. Up to activities done 10 days before in PDA center (including online center doing desktop data entry) and up to last but one completed month in Non PDA center (Who are sending formats to Project)	10	
		Entry pending for activities done between 10-20 days for PDA center or 2 months (excluding this month) data entry is pending for few centres for Non PDA center.	5	
		Entry pending for activities done 20 days before for PDA center or >2 months (excluding this month) data entry is pending for few centres for Non PDA center.	0	
3	Timely Dispatch of the monthly reports (Check incidences of last three months)	All the reports are dispatched before the deadline set by the project (MR Schedule, DC Tour report, Supervisor advance tour programme and tour reports, DC Monthly report, Three Reports generated by DC from INAPH –Bull Production, PT Project and Milk Recording).	5	
		Some of the reports dispatched after the deadline	2	



Sl. No	Item	Criteria	Marks assigned	Marks obtained
		All the reports submitted after deadline.	0	
4	FUR / reimbursement claim submission* (Check incidences of last two occasions)	Within 45 days of period ending(month/ quarterly as the case may be with all supporting documents	5	
		within 45 days but some of the supporting documents missing	4	
		After 46-60 days of period ending	3	
		After 60 days of period ending	0	
5	Semen Distribution (check for 5 villages randomly - last 2 months) Short supply from SS side should be considered	As per schedule in all the 10 incidences	5	
		Not as per schedule - 2 incidences	3	
		Not as per schedule - 4 incidences	1	
		Not as per schedule > 4 incidences	0	
6	Supervision (assessment of at least 2 supervisors)	Carried out >5/ 2-3/< 2 morning milk recording supervisions during last month.	0-5	
		Cross verifications of field activities( regular / occasional/ rarely)	0-5	
		Analytical abilities (good /average/ poor) Use of INAPH application on Netbooks. Ask him to generate any three reports from INAPH system.(Transaction, operational and AIMS reports)	0-5	
		<b>Total</b>	<b>50</b>	

**\*Period for submission of FUR may vary from programme to programme and the format may be modified accordingly.**

### Checklist 2.1: Qualitative Evaluation of field level activities in 3 villages

(Activities in Sl. No 1, 3, 5, 6 and 7 to be carried out at households/Farms and rest at AI centre)

S N	Activity Description	Method of evaluation	Criteria	Marks assigned	Marks obtained
1	Registrations and Tag application	Random check of 5 recent registrations from T01 formats / PDA and cross check the details	All correct	5	
			1 not correct	3	
			2 not correct	1	
			>2 not correct	0	
2	Test AI Follow up % for PD	Check % of AI cases of three to four months back, followed for PD	>90%/ 80-90% /<80%	10/5/0	
3	Checking correctness of pregnancy diagnosis	Check at random about 6 PD done cases from last 1- 2 months (positive and negative equally) and check for the correctness	All correct	5	
			Not tallying -1	4	
			Do -2	3	
			Do >2	0	
4	Calving follow up %	Check % of PD positive cases of eleven months back, followed for Calving	>90%/ 80-90%/ <80%	10/5/0	
5	Checking correctness of calving report	Check at random about 8 calving from last 1- 2 months (male and female equally) along with correctness of dam and daughter numbers	All correct	5	
			Not tallying -1	4	
			Do -2	3	
			Do >2	0	

<b>S N</b>	<b>Activity Description</b>	<b>Method of evaluation</b>	<b>Criteria</b>	<b>Marks assigned</b>	<b>Marks obtained</b>
6	Body Measurement Technique- <b>AIT</b>	AIT- ask AIT to measure 2 animals at random and check the technique	Correct / not	Rate on 0-5 Scale	
7	Body Measurement Technique- <b>MR</b>	MR- ask MR to measure 2 animals at random and check the technique  If village selected has AIT cum MR, marks and percent marks obtained may be calculated out of total 45 instead of 50 marks	Correct / not	Rate on 0-5 Scale	
8	Follow up % for FBM and SBM	Check % of eligible cases followed for last 3 months for FBM and SBM	>90% cases followed	5	
			80-90% cases followed	2	
			< 80% cases followed	0	
			<b>Total</b>	<b>50</b>	

**Note:** If ear tag is not available on the animal that is crosschecked- it is treated as wrong/ not tallying/ not followed-up.  
All the three villages are scored based on the above mentioned method (Please use the working sheet attached). An average of the village scores is to be calculated and added to the above section

### Summary of Scores

Section	Marks obtained	Max Marks
1.1 Surprise milk recording check		50
1.2 Qualitative evaluation of the Project activities at EIA level		50
2.1 Qualitative Evaluation of activities at field level		50

### Summary of Findings:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

### Recommendations:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

### Name and Signature of the Evaluation committee

- 1.
- 2.
- 3.
- 4.