

National Dairy Plan Phase I

Manual on Pedigree Selection



Project Implementation Plan: Volume IV B

Project Management Unit
(located in NDDB)

Table of Contents

Foreword	1
1. Introduction	3
1.1. What is a manual and why it is needed?.....	3
1.2. Whom is this manual for?	3
1.3. Bull Production through Pedigree Selection Programme: A Background.....	3
1.4. Rationale of the Programme	5
1.5. Objectives of the Programme	6
2. Pedigree Selection Programme: An Overview	6
2.1. Prerequisites for an agency contemplating bull production through Pedigree Selection	6
2.2. Snapshot of Project Activities	7
3. Standard operating Procedures (SOP), Minimum Standards and Evaluation Procedure	11
4. Management of the Programme	11
4.1. Project Management	11
4.2. Management Committee	12
4.3. Project Management Cell (PMC).....	13
4.4. Organogram of the PMC.....	13
4.5. Roles and Responsibilities of the Project Management Cell.....	15
4.6. Roles and Responsibilities of the Institutions involved	15
5. Procurement Management	15
6. Fund flow Mechanism and financial management	15
7. Project Monitoring and Evaluation	15
7.1. General	15
7.2. Reporting.....	16
7.3. Project Management Information System (MIS)	17
7.4. How transparency and accountability would be ensured?	17
7.5. Information Disclosure.....	18
7.6. Grievance Redressal Mechanism (GRM)	18
Glossary of terms	20
Annex I : Roles and Responsibilities of the Project Management Cell	21
Annex II : Roles and responsibilities of End Implementing Agencies	26
Annex III : INAPH data entry formats	29
Annex IV : Grievance Redressal mechanism under NDP I	37
Appendix I: Standard Operating Procedures (SOP), Minimum Standards (MS) And Evaluation Procedure	39

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

Indigenous breeds of cattle and buffalo are important component of the agro biodiversity contributing to many livelihood functions to the communities and form the backbone of the Indian agriculture. India considered to be a reservoir of excellent and diverse germplasm of cattle and buffalo genetic resources, gifted with many well-defined breeds for varied agro climatic conditions. India is home for excellent breeds of dairy and dual purpose cattle and buffaloes. Some of the notable dairy and dual purpose cattle breeds are: Sahiwal, Gir, Kankrej, Tharparkar, Hariana, Red Sindhi and Rathi, and the buffalo breeds are: Jaffarabadi, Pandharpuri, Banni, Nili Ravi, Murrah and Mehsana.

The indigenous dairy cattle breeds were evolved over centuries by the strenuous breeding efforts put forth by the pastoral and farming communities and play an important role in agricultural and livelihood development of farmers in respective native tract of these breeds. Presently, these locally adapted cattle breeds are under different levels of endangerment due to various reasons. Conserving and developing these indigenous dairy breeds are therefore important to ensure a sustainable dairy development especially for the farming communities who thrive in the marginal and resource poor environment.

Genetic improvement for a specific trait or group of traits largely depends on the selection of best bulls from the available population and dissemination of their genetics in the target population. Selection of bulls could be done through methods like pedigree selection and progeny testing. Among the indigenous breeds, efforts are to be made to select bulls through pedigree selection owing to the reasons of lack of large AI coverage and smaller population that makes Progeny Testing impossible. Selecting the best bulls based on the performance of their parents (milk production of dams in case of milk production traits) forms the basis of pedigree selection. This manual

provides Standard Operating Procedures (SOP) and minimum standards for implementing an *in-situ* pedigree selection programme under field conditions for production of bulls from indigenous dairy breeds.

It is expected that the Manual for Bull Production through Pedigree Selection will be a useful guide for the project authorities and other 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 technical assistance to the people so that they can have sound guidance while 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 should one 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 agencies which would be implementing the pedigree selection programme under field conditions and for those 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. Bull Production through Pedigree Selection Programme: A Background

1.3.1. Cattle and buffaloes form the backbone of Indian agriculture and dairy industry. For ages, the important multi functions (milk, draft, manure, etc.) of cattle and buffalo were derived using the regionally adapted breeds. India considered to be a reservoir of excellent and diverse germplasm of cattle and buffalo genetic resources gifted with well-defined breeds for a given agro climatic condition. The breed diversity ranges from good milk animals to pure draft types, very tall to dwarf cattle, highland cattle to those adapted to a marshy and desert climate

- 1.3.2. The locally adapted cattle breeds are under different levels of endangerment due to the reasons of mechanization of agriculture, intensification of livestock production systems, poor agricultural policies, restriction of development to a few breeds, introduction of exotic germplasm, changing market requirements, shrinkage of feed, fodder and grazing resources, degradation of ecosystems, natural disasters etc..
- 1.3.3. Retaining our wider cattle genetic resources are important to adapt and develop our agricultural production systems sustainably, as well as to meet the challenges of climate change, diminishing natural resource base and emerging virulent animal diseases. Further, conserving and developing these cattle genetic resources are becoming crucial in ensuring a sustainable livelihood for the poor.
- 1.3.4. Some of the notable dairy and dual purpose cattle breeds of the country are: Sahiwal, Gir, Kankrej, Tharparkar, Hariana, Red Sindhi and Rathi, and the buffalo breeds are Jaffarabadi, Niliravi, Banni, Pandharpuri, Murrah and Mehsana. These breeds were evolved over the centuries by the strenuous breeding efforts put forth by the pastoral and farming communities of respective breeding tract of these breeds.
- 1.3.5. Historically these breeds were continuously developed through traditional breeding systems which took into account the various socio-economic needs of the farming communities. But the production system dynamics and the socio-cultural changes greatly contributed in erosion of the traditional knowledge base leading to productivity loss among the indigenous bovine population. The ongoing deterioration in the quality of indigenous dairy cattle and buffalo population necessitates evolving appropriate breed development strategies with a specific objective to improve the genetic potential of indigenous cows and buffaloes for milk production through selective breeding.

This could be achieved by carrying out systematic milk recording of cows/ buffaloes in the respective population to identify top milk producing females, breeding them with top bulls or semen from top bulls to produce next generation of improved animals.

- 1.3.6. *In-situ* conservation of animal genetic resources combined with promoting its utility in its native agro-eco system through community participation is considered to be one of the efficient methods of genetic resource conservation programmes. Incorporating these elements into pedigree selection programmes under field conditions is thus important.

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 the productivity of our bovines increases. Indigenous cattle breeds such as Sahiwal, Gir, Kankrej, Rathi, Hariana and Tharparkar and Buffalo breeds like Jaffarabadi, Mehsana, Niliravi, Banni and Pandharpuri still contribute significantly to the milk production, especially in the arid farming systems of India. Enhancing the milk production potential of these breeds is equally important to meet the increasing milk demand of our country. A three-pronged strategy is planned to achieve this target: Produce bulls of high genetic merit for semen production; Increase AI coverage in indigenous breeds, and strengthen frozen semen production infrastructure to produce quality semen to carry out required AIs. To produce the required bulls of various indigenous breeds, it is planned to set up pedigree selection programmes in the respective breeding tracts of these breeds, where the best genetics of these breeds is available.

1.5. Objectives of the Programme

1.5.1. The main objectives of the programme are:

- a. Developing indigenous breeds in their native breeding tract
- 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

2. Pedigree Selection Programme: An Overview

- Bull Production through Pedigree Selection for a specific breed would be taken up in its native breeding tract where a sizeable number of Breedable animals of the identified breed is available.

2.1. Prerequisites for an agency contemplating bull production through Pedigree Selection

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

- Identified an area having a sizeable breedable female bovine population of the proposed breed in a compact area
- Experience in implementing field based cattle or buffalo development programmes
- Grass-root level infrastructure, qualified manpower or agreed to engage the required manpower; experience of organizing communities towards cattle /buffalo development programmes or

arrangements with an organization possessing similar infrastructure and experience

2.2. Snapshot of Project Activities

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:

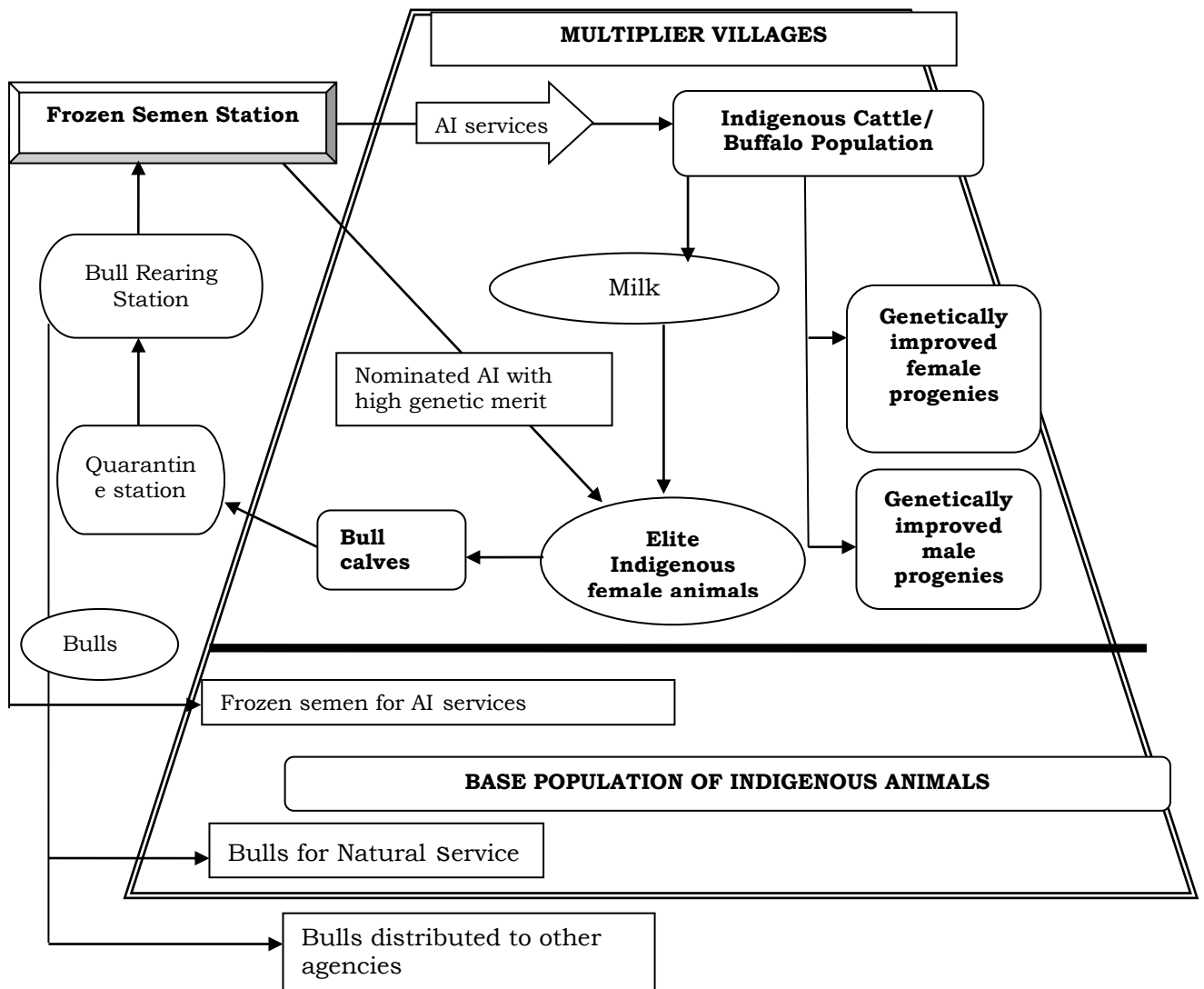
- a. Identification of Area of operation:
 - o The project shall target an indigenous bovine population of at least 50,000 adult breedable female animals of identified breed in the respective native tract in a compact area.
 - o Twenty-twenty five villages referred to as multiplier villages having true type and relatively better animals of the concerned breed shall be initially used for production of bulls through artificial insemination using semen from the available high genetic merit bulls of the same breed. The rest of villages referred to as base villages shall get the semen or bulls from multiplier villages.
- b. Local persons shall be trained in AI for providing services in the villages and equipped with the required FS/ LN containers, AI equipment, accessories and stationary. Alternatively existing AI Technicians shall also be entrusted with this responsibility. AI Technicians would follow the standard AI protocols as per the SOP described in the manual on AI delivery systems. The AI technician shall provide AI services at the door step of farmers.
- c. If new AI centres are established, the project shall procure required AI equipment for establishment of new AI centres. If already existing AI centres are used to deliver AI services, the EIA shall use the

existing infrastructure. However, timely procurement of semen, LN (liquid nitrogen) & other consumables and their transport shall be arranged through the project.

- d. There shall be clearly defined mechanisms in respect to charging of AI service fee.
- e. AIT/ village level resource person shall be entrusted with monitoring and recording day-to-day activities of the project like identification, registration and tagging of elite cows/ buffaloes (having prescribed level of milk production specific for the breed in a standard 305 days lactation period and confirming to breed characteristics) in multiplier villages, monthly milk recording of identified elite cows/ buffaloes, and recording all data through INAPH (Information Network for Animal Productivity and Health) Application.
- f. Simultaneously establish infrastructures for promoting artificial insemination using semen from the available high genetic merit bulls so as to genetically improve the existing population in multiplier villages.
- g. All female animals that are inseminated shall be identified with ear tags; all events of artificial insemination, pregnancy diagnosis and calving of dams shall be recorded in standard recording formats and entered through INAPH application.
- h. Once the identified elite animals calve, all animals shall be milk recorded by a village level recorder.
- i. Milk samples shall be collected and tested for milk fat and data recorded through INAPH.
- j. High yielding cows/ buffaloes would be bred with semen from High Genetic merit bulls through a nominated mating programme.

- k. 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 conformation with breed characteristics.
- l. Procured bull calves shall be kept at a quarantine station and later distributed to semen stations or for natural service after successful completion of quarantine.
- m. 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.
- n. Programme shall produce next generation of improved animals using frozen semen doses produced from the selected bulls through artificial insemination in multiplier villages.
- o. Programme shall produce improved animals using semen of selected bulls through AI/ natural service from improved bulls in the base population.
- p. Monitoring the improvement in milk production over generations through recording of a randomly selected group of animals in base population as well as, daughters born through the programme on a continuing basis
- q. Training and education of participating farmers to create awareness regarding improved animal husbandry practices helping them to exploit the milk production potential of the indigenous animals
- r. Establishing farmers interest groups in each of the project village to ensure farmers' participation and monitoring of village level breed development programmes so as to sustain future indigenous breed development activities

Figure 2.1 : Schematic representation of the Technical programme



3. Standard operating Procedures (SOP), Minimum Standards and Evaluation Procedure

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

4. Management of the Programme

4.1. Project Management

- 4.1.1. The bull production through pedigree selection and Breed Development Programmes are long-term, high cost and specialised jobs requiring high level of technical and professional skills and hence, could be entrusted to only select institutions having requisite experience and skills and the financial resources.
- 4.1.2. The Breed Development programmes for a specified breed would be implemented in mission mode as a project in select districts as per the Standard Operating Procedures (SOPs) and Minimum Standards as prescribed by DADF, GoI.
- 4.1.3. The Project should be headed by a Project Coordinator and comprise one District/Area Coordinator. 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 existing AI technicians of the selected AI centres / new AITs/ village resource persons would be availed.

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) Project Coordinator, who shall be the Member Convener
- c) A minimum of one external subject matter specialist (to be nominated by PMU (located in NDDB))
- d) 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 PMC shall be headed by a Project Coordinator who shall be responsible for execution of the Project as per the SOP and Minimum Standards 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/Area Coordinator- One coordinator for every project.
- b. Accounts/administrative assistant cum data Entry Operator – one for each project
- c. Supervisors – the number shall depend on the number of villages a supervisor can supervise in a month, the work load and the distance between the villages
- d. One livestock supervisor for semen and LN procurement and delivery to AI centres
- e. 30-50 AI Technicians
- f. Milk Recorders – one for each AI centre or AI technicians could take up milk recording also

4.4. Organogram of the PMC

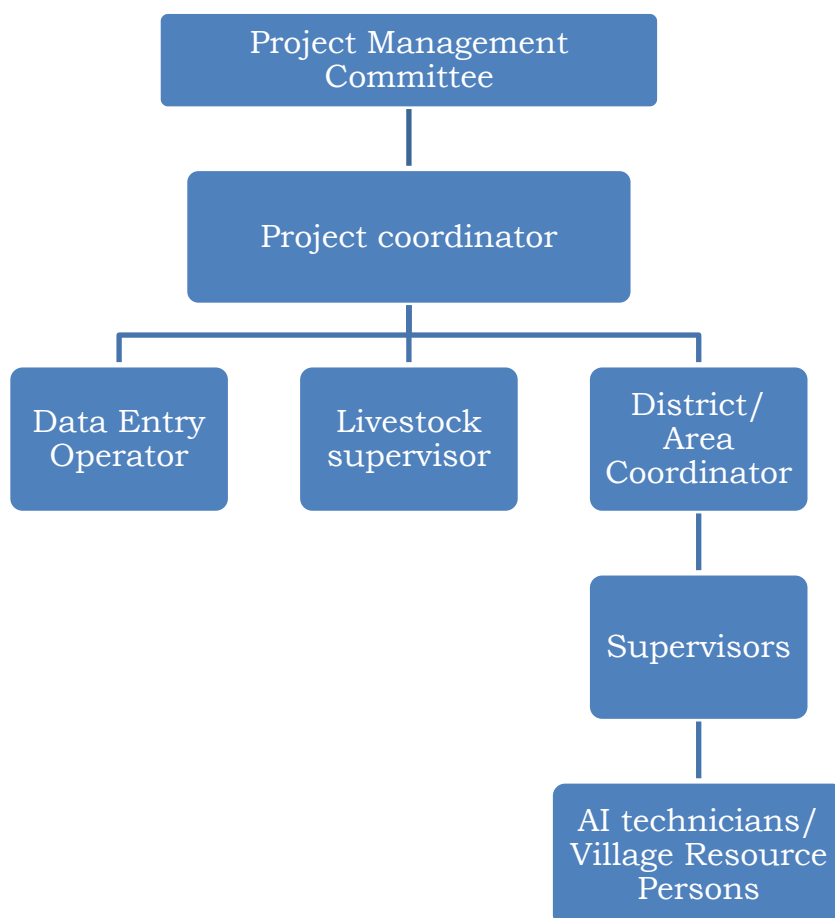
4.4.1. The District/Area Coordinators, Livestock Supervisor, Administrative cum Account Assistant and Data Entry Operator shall report to the

Project Coordinator, whereas the Supervisors shall report to the District/Area Coordinator while the AI technicians and Milk Recorders shall report to the Supervisor.

4.4.2. The end implementing agency shall provide logistical support to the respective project management cell in carrying the project activities in the project villages to ensure that the project activities in the selected villages are implemented as per the approved proposal, guidelines and within the specified time frame.

4.4.3. The proposed Organogram of the PMC is depicted in the following diagram:

Figure 4.1 : Organogram of Project Management Cell



4.5. Roles and Responsibilities of the Project Management Cell

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

4.6. Roles and Responsibilities of the Institutions involved

- A host of institutional arrangements are required for successful implementation of the Pedigree Selection 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 appended as **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

- Each Project is monitored and reviewed by a Management Committee (MC) half yearly. Project Coordinator reports to MC on all matters related to the project.
- PMC has its mechanism of monitoring the project through District Coordinator, Supervisors and village committees.

- PMC monitors and supervises 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 and supervisors.
- An internal mechanism for independent evaluation of each project periodically is at Appendix II.
- It is also proposed that the project would be annually evaluated by a committee appointed by PMU.

7.2. Reporting

7.2.1. Management action at various levels will be guided by following reports:

- Monthly report will be prepared and reviewed by PMC.
- Six-monthly reports will be prepared in a standard format and will be provided to the PMU for performance review.

7.2.2. The six-monthly report submitted by the EIA to the PMU will include:

- up-to-date physical achievement and financial expenditure data compared to annual and end-project targets;
- updated performance indicators of sub project performance compared to annual and end-project targets;
- adherence of the EIA to implementation procedures and processes;
- successes and problems encountered during the reporting period with suggested remedial actions; and
- adherence to the Environment & Social Management Framework (ESMF) and problems encountered, if any.

7.3. Project Management Information System (MIS)

- 7.3.1. An information system, INAPH for collecting information from the field, analyzing the same, generating different reports and giving feedback to all the stakeholders in the project should be used. 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 NDDDB, 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
 - 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 DADF would appoint a separate committee to fix the charges for the bulls and arrange for the allocation of bulls to semen stations and for natural service. Monitoring of bull production under the project will be carried out through 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 e.g., DCS/ appropriate locations, containing information that describes PS 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 0.

Glossary of terms

Productivity	: Production per animal per day
Pedigree selection	: Choosing of breeding stock (bulls and bull mothers) on the basis of performance of their parents / ancestors
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
<i>In-situ</i> conservation	: <i>In- Situ</i> conservation is the on-site conservation of genetic resources within natural habitats and ecosystems

Annex I : Roles and Responsibilities of the Project Management Cell

Project Coordinator

- He/She would be responsible for execution and implementation of the project as per the SOP and Minimum Standards and for achieving the objectives and targets given in the approved Proposal through the project team.
- He/She would be responsible for implementing all technical, administrative and financial functions of the project.
- He/She would arrange to keep proper accounts.
- He/She would submit required technical and financial reports to the Management Committee periodically.
- He/She would conduct monthly review meetings at the field level.
- He/She would be responsible for all AI related activities such as distribution of semen doses, uninterrupted supply of liquid nitrogen and other AI consumables to all the project centres.
- He/She would ensure timely submission of various reports by the AI technicians.
- He/She would be responsible for timely procurement of bull calves from the villages and rearing of bull calves in the rearing station.
- He/She would be responsible for distribution of bulls as per directions from the Management Committee.
- He/She would arrange to procure all the capital and consumable items that are required to implement the project, including semen and LN.
- He/She would carry out any other function assigned to him by the Management Committee.

District Coordinator

- He/She would be responsible for execution and implementation of the project as per the SOP and Minimum Standards and for achieving the objectives and targets given in the approved Proposal through the project team in his assigned area/ region.
- He/She would coordinate parentage testing, disease testing and procurement of male calves.
- He/She would arrange transportation of selected bull calves to rearing station.
- He/She would arrange timely data entry of all activities.
- He/She would randomly check all activities.
- He/She would supervise extension meetings at the field level.
- He/She would randomly check pregnancies at the field level.
- He/She would provide his services in the infertility camps organised by supervisors and AI technicians.
- He/She would supervise rearing of bull calves at the rearing station.
- He/She would be responsible for supplying semen and LN to the AI technicians and maintaining a reserve stock.

Data entry operator

- He/She would be responsible for timely data entry through INAPH.
- He/She would ensure that all data formats are received from all the AI technicians, milk recorders, supervisors etc.
- He/She would arrange to get field data corrected through the supervisors whenever required.
- 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.

The Administrative cum Accounts Assistant

- He/She would be responsible for the maintenance of proper accounts.
- He/She would assist the Project coordinator in preparation of FUR's and getting timely release of funds from PMU (located in NDDDB).
- He/She would assist the Project coordinator in office related matters.
- He/She would assist the project coordinator in inventory management of semen and other consumables related to the project.

Livestock Supervisor

- He/She would be responsible for maintaining supplies of LN and semen to the AI technicians.
- He/She would be responsible for contacting the LN supplier for supplying on timely basis.
- He/She would be responsible for sourcing semen from semen stations on timely basis.
- He/She would be responsible for proper rearing of the bull calves that are procured under the project.
- He/She would be responsible for maintaining the supplies of ear tags, applicators, pins, and other AI consumables and accessories.
- He/She would collect charges for semen and LN supplied to AI technicians, and provides regular accounts to the District Coordinator.
- He/She would assist the District Coordinator in inventory management of AI related materials and consumables.

Supervisors

- He/She would supervise around 15 AI technicians.
- He/She would conduct surprise checking of 30% of milk recordings.

- He/She would coordinate nominated services, and male calf production.
- He/She would arrange for timely recording and transmission of data formats to project coordinator.
- He/She would ensure 100% AI, pregnancy and calving follow-up by all AI technicians.
- He/She would be responsible for organising infertility camps in the villages with the support of the DC.
- He/She would assist in screening of bull calves for diseases, correct parentage etc. and their selection.

AI Technicians

- He/She would ear tag all animals before insemination.
- He/She would carry out AI.
- He/She would follow-up all AIs for repeat AI, PD and Calving.
- He/She would ear tag and register all female calves born.
- He/She would, with the support of the supervisor and the DC, organise infertility camps regularly.
- He/She would, with the support of the supervisor, organise extension activities in his villages to promote AI.
- He/She would maintain records and submit reports timely.
- He/She would conduct monthly milk recordings as per milk recording schedule and follow SOP.
- He/She would collect milk samples for their testing.
- He/She would carry out nominated services and follow-up for PD and calving
- He/She would ear tag all bull calves born out of nominated services.

- He/She would assist in screening of bull calves for diseases, correct parentage, etc. and their selection.
- He/She would maintain records and submit reports timely.

Annex II : Roles and responsibilities of End Implementing Agencies

1. Roles and responsibilities of EIAs (Milk Federation/state departments etc)

- 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 Pedigree Selection of identified breed” and have jointly with PMU the overall responsibility for execution and implementation of the project and authorizing the Managing Director/Chief Executive Officer to sign the Grant Agreement on behalf of the EIA and thereby agreeing to bind itself with the terms and conditions of the Grant Agreement.
- If the EIA owns a semen station, it shall produce and supply frozen semen doses from their Frozen Semen Station (s) for use by the Project.
- The EIA shall provide all logistical support and assistance required by the PMC in carrying out the responsibilities entrusted to the PMC.
- The agencies shall consider providing suitable office premises for the PMC at the premises of their regional/ district level offices if requested by the PMC.
- Provide the services of exclusive manpower having the required qualification and experience to work in the PMC.
- Identify suitable village youths to work as Mobile AI Technicians to provide door step AI services to selected villages.

- Receive Fund advances from PMU (located in NDDB) as per the approval of the Management committee and instructions of the Project Coordinator.
- Maintain the necessary accounts of the Project as per the approved procedure.
- The EIA shall provide its existing facilities for quarantine and rearing of the male calves to the project, and the project shall fund for strengthening the facilities if required.

2. Obligations of PMU(located in NDDB)

- PMU (located in NDDB) shall provide the necessary funds required for the Project as per the recommendation of the Management Committee. It 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 arise subject to the EIA and the Partner organizations fulfilling their obligations as specified in the Grant Agreement.
- 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 in 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)
Pedigree Selection Project

T01

ANIMAL REGISTRATION

AI Technician Name: _____

Month _____ Year _____
Date: _____

Animal Details 1. *Tag number <input type="text"/> 2. *Animal Movement <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 3. *Species <input type="checkbox"/> Cattle <input type="checkbox"/> Buffalo 4. *Breed Name 1 <input type="text"/> 2 <input type="text"/> 3 <input type="text"/> 5. *Registration Date <input type="text"/> dd/mm/yyyy 6. *Age <input type="checkbox"/> Yrs <input type="checkbox"/> Months 7. *Date of Birth (dd/mm/yyyy) <input type="text"/>		8. Registering Orgn. <input type="text"/> 9. Sire ID <input type="text"/> 10. Dam ID <input type="text"/> 11. Sire's Sire ID <input type="text"/> 12. Dam's Sire ID <input type="text"/> 13. Number of Calving <input type="text"/> 14. Last Calving Date (dd/mm/yyyy) <input type="text"/> 15. *Pregnant <input type="checkbox"/> Yes <input type="checkbox"/> No 16. *Pregnancy Months <input type="text"/> 17. *Milking Status <input type="checkbox"/> In Milk <input type="checkbox"/> Dry	
Owner Details 18. *Village Name <input type="text"/> 19. *Owner New <input type="checkbox"/> Existing <input type="checkbox"/> 20. *Owner's Name along with Father's Name <input type="text"/> 21. *Date of Birth <input type="text"/> dd/mm/yyyy 22. Affiliated Agency <input type="text"/>		Previous owner Details 23. Village Institution Name <input type="text"/> 23. Farmer Association No <input type="text"/> 24. Below Poverty Line <input type="checkbox"/> Yes 25. Mobile Number (11 digits) <input type="text"/> 26. Landline Number (with STD code) <input type="text"/> 27. Name <input type="text"/> 28. State <input type="text"/> 29. District <input type="text"/> 30. Taluka <input type="text"/> 31. Village <input type="text"/> 32. Remarks <input type="text"/> 33. Price <input type="text"/>	
Location Details 34. Hamlet <input type="text"/> 35. Tehsil <input type="text"/>		36. District <input type="text"/> 37. State <input type="text"/>	
<p>Fields Marked with * are Mandatory</p>			

Signature

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

T02-03-04

AI Technician Name : _____
District : _____

Month : _____ Year : _____
State : _____

SN	*Tag Number	Artificial Insemination					Preg. Diagnosis			Calving (T04)					
		*AI Date dd- yyyy	*Semen/ Bull Number	Batch #	Nom. AI? (Tick if Yes)	Amount	*PD (dd-mm- yyyy)	*PD Result (Preg./ Non- Preg.)	NS/ Other servic provider?	*Calving Dat (dd-mm-yyyy)	*Ease of calving 1	*Calvin g type 2	*Tag Number Calf-1 / Calf -2	*Sex (M/F)	*Wei ht (Kg.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															

T02 Signature

T03 Signature

T04 Signature

Fields Marked with * are

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

¹ For Ease of Calving, mark "N" – Normal, "SP" – Slight Pull, "HP" – Heavy Pull and "D" for Distocia

² 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)
Pedigree Selection Project
MILK RECORDING (MR)**

T05-05A

Milk Recorder Name : _____
District : _____

Testing Laboratory : _____

Month : _____ Year : _____
State : _____

Sno	*Tag Number	Milk recording (T05)						Milk Components testing (T05A)						Village Name	Owner's Name	Remarks
		*Status Milk (M) / Dry-off (D)	*Recording Date (dd-mm-yy)	Milk Production (Lit)		*Sample Box No	*Bottle No	Fat %	Protein %	SNF %	Lactose %	SCC ('000s)	MUN (mg.)			
				*Mornin g	*Evenin g											
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

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)
Pedigree Selection Project**

T06

ANIMAL RE-REGISTRATION

AI Technician Name: _____

Month **Year**
Date:

<p>Animal Details</p> <p>1. *Tag number <input style="width: 200px;" type="text"/></p> <p>2. *Animal Movement <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>3. *Re-Registration Date <input style="width: 80px;" type="text"/> dd/mm/yyyy</p>		<p>4. Registering Orgn. <input style="width: 160px;" type="text"/></p> <p>5. Number of Calving <input style="width: 110px;" type="text"/></p> <p>6. Last Calving Date (dd/mm/yyyy) <input style="width: 110px;" type="text"/></p> <p>7. *Pregnant <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>8. *Pregnancy Months <input style="width: 20px;" type="text"/></p> <p>9. *Milking Status <input type="checkbox"/> In Milk <input type="checkbox"/> Dry</p>			
<p>Owner Details</p> <p>10. *Village Name <input style="width: 130px;" type="text"/></p> <p>11. *Owner New <input type="checkbox"/> Existing <input type="checkbox"/></p> <p>12. *Owner's Name along with Father's Name <input style="width: 100px;" type="text"/></p> <p>13. *Date of Birth <input style="width: 60px;" type="text"/> dd/mm/yyyy</p> <p>14. Affiliated Agency <input style="width: 130px;" type="text"/></p>		<p>15. Village Institution Name <input style="width: 160px;" type="text"/></p> <p>16. Farmer Association No <input style="width: 160px;" type="text"/></p> <p>17. Below Poverty Line <input type="checkbox"/> Yes</p> <p>18. Mobile Number (11 digits) <input style="width: 160px;" type="text"/></p> <p>19. Landline Number (with STD code) <input style="width: 160px;" type="text"/></p>		<p>Previous owner Details</p> <p>20. Name <input style="width: 100px;" type="text"/></p> <p>21. State <input style="width: 100px;" type="text"/></p> <p>22. District <input style="width: 100px;" type="text"/></p> <p>23. Taluka <input style="width: 100px;" type="text"/></p> <p>24. Village <input style="width: 100px;" type="text"/></p> <p>25. Remarks <input style="width: 100px;" type="text"/></p> <p>26. Price <input style="width: 100px;" type="text"/></p>	
<p>Location Details</p> <p>27. Hamlet <input style="width: 130px;" type="text"/></p> <p>28. Tehsil <input style="width: 130px;" type="text"/></p>		<p>29. District <input style="width: 160px;" type="text"/></p> <p>30. State <input style="width: 160px;" type="text"/></p>			
<p>Fields Marked with * are Mandatory</p>					

Signature

**Information Network for Animal Productivity and Health (INAPH)
Pedigree Selection 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)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

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)
Pedigree Selection Project
EAR TAG CHANGE

T08

Inseminator Name : _____

Month : _____ **Year :** _____

District : _____

State : _____

Sr. No.	*Transaction Date (dd-mm-yyyy)	* Old Tag Number	* New Tag Number	Owner's Name	Village Name	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Fields marked with * are mandatory

Signature

**Information Network for Animal Productivity and Health (INAPH)
Pedigree Selection Project
MILK RECORDING SCHEDULE**

T11

MR Name : _____
Centre Name: _____

Month : _____ **Year :** _____
District : _____ **State : Tamil Nadu** _____

Sr. No.	* Animal Tag No.	Rec. No.	Rec. Date (dd)	Recording Time			Farmer Name &
				Morning	Noon	Evening	
				hh:mm	hh:mm	hh:mm	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Date: _____

Signature of District Coordinator

**Pedigree Selection 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								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Date of drying: _____

Standard Lactation Yield: _____

Completed Lactation Incentive Given:

Amount (Rs.) _____ on _____

Annex IV : Grievance Redressal mechanism under NDP I

For addressing grievances arising under NDP I, following grievance redressal mechanism 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, 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

a Pedigree Selection (PS)

programme

for

Cattle and Buffalo

May, 2012

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.

Selection of bulls could be done through methods like pedigree selection and progeny testing. 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 parents (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

Objectives of the Programme

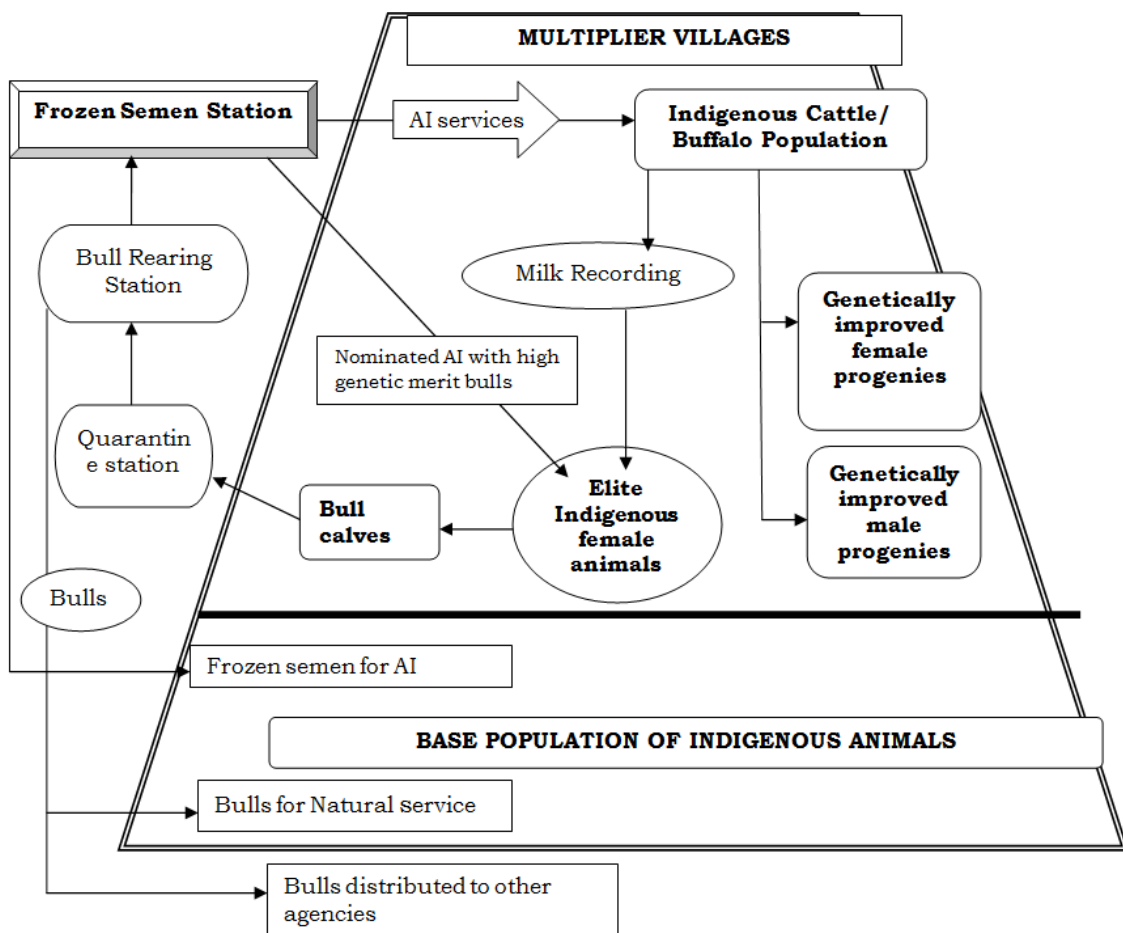
The main objectives of the programme are:

- 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), Minimum Standards and Evaluation procedure

A. Standard Operating Procedures (SOP)

a) Bulls and semen used in AI programme

- i. Semen produced from a semen station graded “A” or “B” by CMU, DADF, GOI shall only be used.
- ii. 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 shall only be used for AI

b) When an animal is brought for the first time for insemination, it 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.

c) Animal Identification:

- i. All female animals inseminated under AI programme, animals under milk recording and all daughters that are born under the AI programme and all male calves born out of nominated mating shall be identified by applying ear tags.
- ii. 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.
- iii. The specifications for the ear tag shall be: The male tag preferably 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.

Figure A.1: Ear Tag



Figure A.2: Ear Tag applicator



- iv. The ear tag should 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



- v. 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.

d) Registration of calves:

Upon receiving the information about the birth of daughter or male calf born from nominated mating, the AI technician along with the concerned supervisor and the Milk recorder / local resource person shall visit the calf and physically verify the animal and the number of the dam and the insemination particulars of the dam for verifying the sire number as well as ear tag the calf within 45 days of birth.

e) Parentage verification:

- i. 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) would be re-checked for correct parentage. In all doubtful cases, a blood sample would be taken from both mother and progeny (daughter/ son) and semen sample from the sire, for parentage confirmation using DNA markers.
- ii. A blood sample of all male calves born out of nominated mating would be collected for parentage confirmation.
- iii. Parentage verification database would be created to give feed back to the concerned AI Technicians and supervisors.
- iv. Calf rallies: 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.

f) Milk Recording

The key points to be considered for milk recording include:

- i. 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.

- ii. 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.
- iii. First recording would be carried out on or after 5 days of calving and not later than 25 days of calving.
- iv. Milk recording for an animal would 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 minus 5 days) at the place of milking.
- v. 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.
- vi. Milk recording would be carried out using a transparent calibrated plastic jar with a sensitivity of 100 cc or using an accurate calibrated weighing machine.

Figure A.4: Calibrated Plastic Jug



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

- viii. Every animal would 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.
- ix. If the animal becomes dry, the dry date should be recorded invariably.
- x. 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 would not be allowed to suckle its mother. Milk collected from all four quarters would be measured and the farmer would be advised to feed the calf separately.
- xi. Milk would not be recorded on the day when milk has dropped suddenly by 50% of the previous recording or when the animal is suffering from some form of illness. In such cases the reason for sudden drop would be recorded and the milk recording would be reattempted after a period of at least five days.
- xii. If the animal gives milk only one time, then only that would be recorded and the other timing would be left blank.
- xiii. The milk recorder shall also record the details of the recorded yield in a milk recording card that is kept with the animal owner. Please refer the format T 12 at Annex I.
- xiv. 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).

g) Procedures for supervision

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

- i. One supervisor would 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.
- ii. Each supervisor would every month check all the events happening in that month such as – 100% of daughters born and 100% of male calves reported born to nominated mating, randomly check at least 30% of milk recordings and pregnancy diagnosis results in his assigned villages. He would submit a tour diary every month.
- iii. For checking the milk recordings, the supervisor would 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. Alternately, the supervisor would, 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 would be used to compare with the preceding milk recording data of the same animal.
- iv. In addition to supervisors, project activities would also be supervised and monitored by District Coordinator, and Project Coordinator through regular and surprise field visits, bimonthly review meetings, AITs review meetings etc.

h) Nominated Mating

- i. It should be ensured that only semen from top high genetic merit bulls of the respective breed shall be used for nominated mating of the top females declared elite under the project to produce superior male calves.
- ii. It shall be ensured that the standard lactation milk yield that has been arrived at of elite females, based on a milk recording for a complete lactation, is 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.
- iii. Semen from bulls whose dam’s milk yield is more than the yield specified in the “Standards of Genetic Merit of Breeding bulls” in the Minimum Standards for Production of Frozen Semen prescribed by DADF should be used for nominated mating

i) Male Calf Procurement

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

- i. The male calves produced out of nominated mating would be procured by the project at the earliest possible to avoid loss of this superior germplasm
- ii. A price decided by the organization shall be paid to the owner for a healthy male calf.
- iii. It shall be ensured that all the procured bull calves have a confirmed parentage that has been confirmed using DNA markers and it would be ensured that the bull calves are free from any physical and congenital abnormalities.
- iv. 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.

- v. Bull calves sufficient to meet the requirement of semen stations shall only be procured and reared. Bulls for natural service shall be reared only if there is a firm demand from any of the agencies implementing such programmes.

j) Rearing of Male calves

Procured male calves would be tested for TB, JD and Brucellosis regularly till their disposal/ sale.

k) Information System

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.

l) Extension Programmes

The project shall develop appropriate extension materials related to breed improvement, breeding, AI awareness, improved animal husbandry practices, calf rearing, milk recording for production of bull calves, etc., and conduct periodical extension programmes in the villages. The project shall organize regular infertility camps to address infertility problems of the cows/ buffaloes in the project villages.

m) Wherever possible, the project shall co-ordinate with other agencies that are involved in animal productivity enhancement programmes in the project area.

n) Farmers interest groups / village committees

- i. The project may organize village committees or farmers' interest groups in each of the village. The Project Management

Committee shall determine the composition and functioning of these committees. It should be ensured that the group meets periodically and the minutes of the meeting are recorded.

- ii. The village groups shall render all possible assistance for the entire range of activities planned at the village level. The groups also shall aid in monitoring the progress of the programmes in their respective village along with the project staff and offer suggestions and help for programme improvement.

o) Animal Health Protocols for personnel in Project Areas

- i. 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.
- ii. Disease reporting

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.

- iii. Bio-security protocols for personnel: All AI technicians would need to follow certain hygienic practices that would minimize the spread of infection. The SOPs for the same would be developed.

B. Minimum Standards to be achieved

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

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

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

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

All data related to pedigree selection programme shall be captured through INAPH (Information Network for Animal Productivity and Health) application.

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

Bulls whose dam’s milk yield is 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 shall only be used for AI.

Cows/ buffaloes selected for nominated mating 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 DADF.

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

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

Achieve 80 % of all physical targets and qualify in annual evaluation by an independent expert panel appointed by DADF.

Evaluation System for PS Projects

Guidelines

General:

The evaluation would be done by a committee (minimum of 4 members) constituted by the Management Committee of the respective project.

All the committee members would reach the district on the previous day of the scheduled dates (at least 2 full days) of evaluation.

A minimum of 3 committee members should be available.

Each member of the committee should score the 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 scoring (average of all the scores given by the members).

The evaluation of the PS Project shall be done in two phases

Phase 1: Surprise milk recording validation by committee

Phase 2: Qualitative evaluation of activities of the project

Phase 1

Surprise milk recording validation:

The Evaluation Committee (EC) shall 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.

Qualitative evaluation of the Project activities at EIA level

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

Phase 2:

Qualitative Evaluation of activities at the 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 shall select one village each.

Activities mentioned in checklist 2.1 shall 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) at
3 Milk Recording centre**

Farmer Name:

Name of the Milk Recorder:

ID of Animal under Milk Recording:

Sr. No.	Item description	Answer	Marks assigned	Marks obtained
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 not allowed to suckle? (Suckling only for milk letdown should be allowed)	Yes / No	3/0	
14	Awareness of MR about PS activities		On 5-0 Scale	
		Total	50	

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 Project activities at EIA level (Total 50 marks)

SN	Item	Criteria	Marks assigned	Marks obtained
1	Exclusivity of the officers assigned to the project	Exclusive with no other responsibilities	10	
		Exclusive but looks after some specific assignments in addition to the PSP 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 PSP 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)	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	5	

SN	Item	Criteria	Marks assigned	Marks obtained
		DC from INAPH		
		Some of the reports dispatched after the deadline	2	
		All the reports submitted after deadline.	0	
4	Conduct of Fertility management camps in the villages. (Number of camps during last 6 months)	All AI centres covered at least once	5	
		> 80% and less than 100% centres covered at least once	4	
		> 60% and less than 80% centres covered at least once	3	
		< 60% centres covered	0	
5	Conduct of Farmer awareness programme (s) (Number of programmes during last 6 months)	All AI centres covered at least once	5	
		> 80% and less than 100% centres covered at least once	3	
		> 60% and less than 80% centres covered at least once	1	
		< 60% centres covered	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	
		Total	50	

Checklist 2.1: Qualitative Evaluation of field level activities at 3 AI centres

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

Sl. No	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	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	
6	Conduct of Farmer awareness programme (s)	Check for conduct of awareness programme(s) in the village during the last 6 months.	Yes/ no	5/ 0	
7	Conduct of	Check for conduct	Yes/ no	5/ 0	

Sl. No	Activity Description	Method of evaluation	Criteria	Marks assigned	Marks obtained
	Fertility management camp(s)	of Fertility management camp(s) in the village during the last 6 months.			
8	Conception rate for AI done	Check for the overall conception rate for the AI done during the last 6 months from INAPH AIMS report.	>35%	5	
			25-35%	3	
			< 25%	0	
			Total	50	

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 sheets 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 Agency		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.

Additional blank sheets may be added whenever required