Methodology

For

Accreditation of Artificial Insemination Training Institutes

Department of Animal Husbandry Dairying & Fisheries Government of India 2018

CONTENTS

Abbreviations

AI: Artificial Insemination

AIT: Artificial Insemination Technician

AITI: Artificial Insemination Training Institute

CMU: Central Monitoring Unit

DADF: Department of Animal Husbandry, Dairying and Fisheries, Government of India

FSD: Frozen Semen Dose

GoI: Government of India

ICT: Information Communication Technology

LN: Liquid Nitrogen

MS: Minimum Standards

PD: Pregnancy Diagnosis

T &C: Terms and Conditions

PREAMBLE

As per National Livestock Policy 2013 one of the major challenges which India faces at present is low productivity of livestock. This is mainly on account of insufficient coverage through artificial insemination, low conception rates, non-availability of quality males for breeding, poor management practices, high mortality & morbidity losses due to diseases, inadequate marketing infrastructure and unorganized marketing.

2. National Livestock Policy accordingly lays a special emphasis on improving productivity of livestock through enhanced AI coverage, improving availability of high genetic merit disease free males for breeding and to creating an enabling environment for improving infrastructure supporting livestock production.

3. National Livestock Policy envisages that AI technicians and paravets are trained at accredited training institutes following uniform training module in order that they acquire adequate skills for delivery of breeding inputs, extension and other services at the farmers' doorstep.

4. In pursuance of the National Livestock Policy Department has constituted Central Monitoring Unit (CMU) for evaluation and accreditation of AI training institutes. This document namely "Methodology for Evaluation of AI Training Institutes" has been finalized in consultation with experts form ICAR, State Animal Husbandry Departments, Livestock Development Boards and NDDB.

INTRODUCTION

Artificial Insemination Training Institutes (AITI) operate under the umbrella of State Governments, Cooperatives, NDDB, NGOs and private agencies across the country. As AI training is one of the most important tools for delivery of AI services to the dairy farmers in the country, the quality of training imparted by AITI is essential in order to produce technicians with desired skill and competencies to undertake artificial insemination services successfully.

Quality of AI training varies across the organizations due to absence of a uniform training module, standard protocol and a mechanism to ensure its effective implementation by the training institutes. The training institutes differ in the following parameters while delivering AI training:

i) Duration of classroom and field training
ii) Faculty qualification and experience
iii) Facility for classroom and field training
iv) Hands on training on live animals
v) Learning resources (teaching aids and training materials)
vi) Infrastructures and facility for board and lodging

In order to minimize the existing discrepancies across AITIs, a set of standards needs to be put in place and followed consistently by all AITIs in the country.

OBJECTIVE OF ACCREDITATION:

Accreditation will assist:

1) Maintenance of quality and uniformity in AI training provided by various AITIs across the country;
2) Meeting increasing demand for skilled Artificial Insemination Technicians (AITs) in the country.

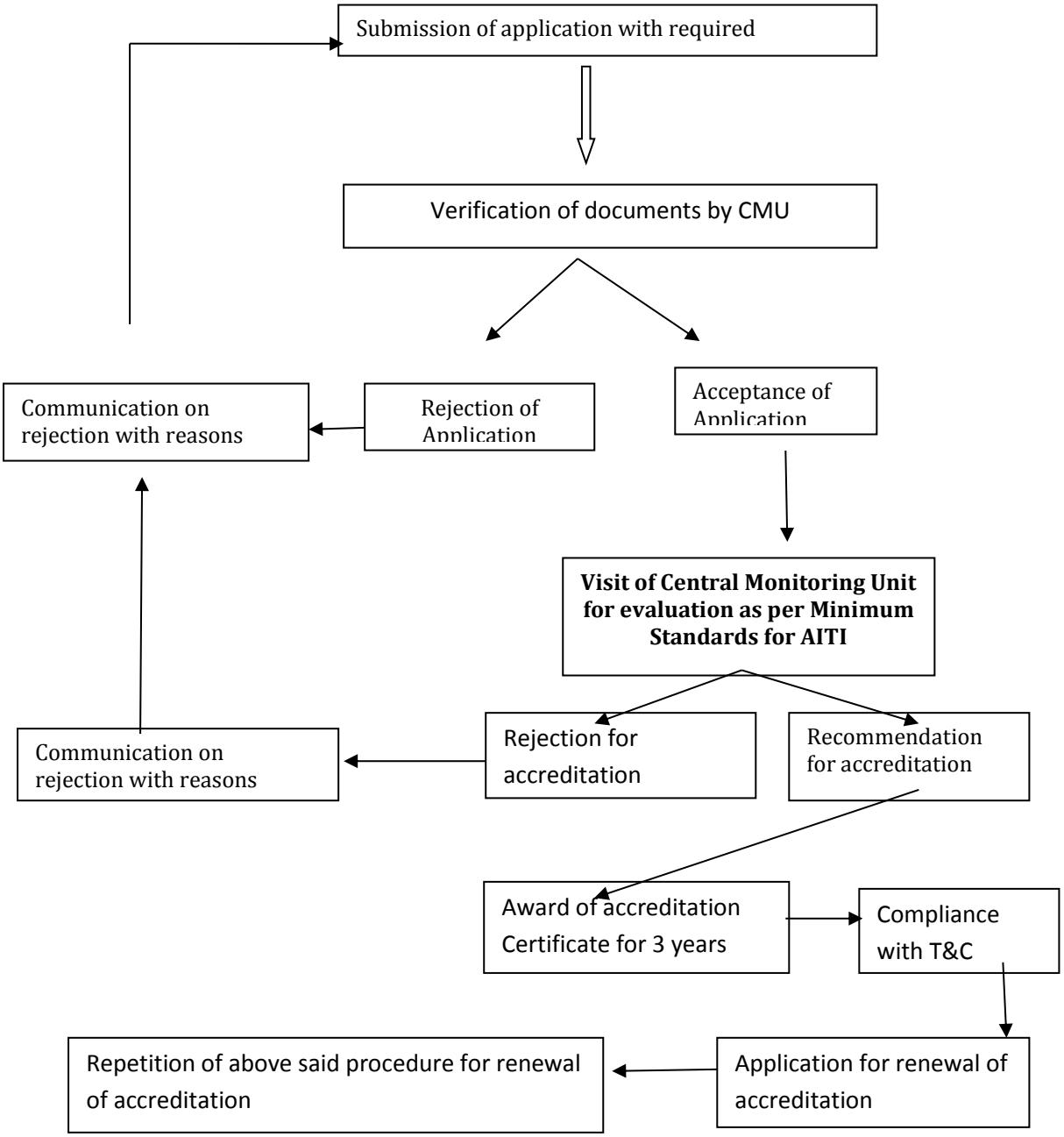
1. Accreditation of AITIs

The process of accreditation includes a series of relevant sequential steps which an AITI seeking accreditation has to follow in order to get accredited by the Central Monitoring Unit (CMU). The steps include the following which are also showcased in the form of a flow diagram as mentioned in 1.1 in the ensuing points.

1) Submission of Application (Annex II) along with the required documents as prescribed below at point 1.2.
2) Verification of documents by the Central Monitoring Unit against prescribed Minimum Standards for AITI set up by Department of Animal Husbandry Dairying & Fisheries (Annex I).
3) Communication by the Central Monitoring Unit on either acceptance or rejection of the application with reasons.
4) In case application is accepted, the application is further processed for a visit of the Central Monitoring Unit to the AITI.
5) If application is rejected, the applicant may re-apply after removing the deficiencies pointed out by the CMU
6) Award of Accreditation certificate (Annex VII) by the CMU with the terms and conditions of accreditation for a **period of two years.**
7) For renewal of Accreditation, the AITI has to apply as per Annex VII and CMU will follow the same procedure as followed for fresh accreditation.
8) Once accreditation is obtained, the AITI has to comply with the Minimum Standards for AITIs and follow the same consistently. The AITI must respond to any queries of CMU as and when asked.

1.1 Accreditation process- Flow Chart

Flow Diagram, Accreditation Process



1.2 List of Documents:

The documents on the following particulars need to be attached along with the application for accreditation:

1) Mission & Objective of AI training Institute
2) Memorandum of Article / Bylaws of the Organisation/AI training Institute, as applicable
3) Details of Infrastructure (Office, Classroom, Board & Lodging, etc.)
4) Learning resources /teaching aids
5) Facilities available for practical and on the job field training on animals
6) Details of training programmes, duration, course curriculum, training schedule, admission norms and internal evaluation process
7) Details of training faculty
8) Copies of records maintained by the AITI(as per annexure V)
9) Progress for the last two years (as per annexure VI)

1.3: Terms and Conditions for Accreditation:

1) All the accredited AITIs must strictly follow the Minimum Standards for : a) Infrastructure and faculty; b) admission norms; c) course curriculum d) course content e) schedule and e) evaluation & feedback processes as prescribed by DADF during the tenure of the accreditation.
2) Accreditation is valid for a maximum period of 3 years from the date of issue.
3) In case the AITI does not adhere to the Minimum Standards so prescribed the accreditation shall be cancelled.
4) The institute has to apply for a renewal in the prescribed format three months before the expiry of Accreditation.
5) After award of accreditation, the AITI has to regularly submit annual returns and progress report to the DADF in the prescribed format (Annex V and VI) by the 30th April of the succeeding year, failing which the accreditation may be cancelled.

Annexure – I

Minimum Standards

for

Artificial Insemination Training Institutes

Training of AI Technicians

Every AI technician needs to have a certificate of AI training from an accredited AI training institute. On attaining certificate after successful completion of the course (or refresher course as the case may be) from an accredited training institute a license to this effect shall be issued by the State Animal Husbandry Department.

Each accredited AI Training Institution needs to:

a) Follow the standard curriculum and duration for class room and practical training as described in Part I below;

b) Have arrangements for class rooms with teaching aids and hands on training in palpating morbid reproductive organs in the laboratory and in live animals and for carrying out artificial insemination as laid down in Part II below;

c) Have arrangements with AI Service providing organisations to provide practical training to its trainees for the duration approved, and

d) Have a registered veterinary practitioner under whose supervision the institute imparts training.

e) Evaluate the trainees and award a certificate after successful completion of the course. Furthermore accredited institutes will send the names of the successful trainees to the State Animal Husbandry Department for issue of a license bearing a photograph and a UID of the trainee. On successful training the AITI shall equip each trainee the AI kit provided under NPBBD. SLDB will arrange mobility of AI technician under NPBBD

Part I

Curriculum and course content for AI technician training

A. Duration of training

1) AI basic training:

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

2) AI refresher training:

- Classroom and Practical training – 5 working days

B. Admission norms:

1. AI Basic Training:

The participant of this programme should have at least passed in 10^{th} standard examination with not less than 18 years of age.

2. AI Refresher Training:

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

C). Class Room:

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

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

3) Benefits of Crossbreeding and genetic improvement of dairy animals

4) The existing State Breeding Policy and its enforcement.

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

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

7) Male reproductive organs & their functions

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

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

9) Female reproductive organs & their functions

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

11) Normal reproductive cycle

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

13) Ideal calving interval

    - Service period, dry period and Inter-calving period

14) Process of insemination:

- Collecting History
- Standard Operating Procedure (SOP)

15) Importance of:

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

16) AI equipment and accessories & their care

17) Liquid nitrogen handling:

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

18) Pregnancy Diagnosis

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

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

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

22) Measures to obtain maximum fertility

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

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

25) Starting an AI centre

26) Method of non-surgical castration

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

28) Care and management of Dry Pregnant animals

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

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

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

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

33) Basic aspects of nutrition and concept of Ration Balancing

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

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

36) Hygiene clean milk production and prevention of mastitis

37) Importance of Animal Insurance; various insurance schemes

38) Various government schemes in the dairy sector: DEDS, NPBBD and NDP.

D. Case Studies

1) Advantages of AI over natural service.

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

3) Record keeping and using INAPH.

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

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

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

6) Care of young calves till its pregnancy

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

8) Superstitious believes Vs Scientific method of breeding
9) Any new case study relevant to the case study as approved by Principal of the concerned AITI.

E. Audio Visual materials:

1) Animal reproduction and AI

2) Changing lives

3) DO and DONOT of AI

4) Hygienic milk and milk product processing and packagining

5) Year round fodder production

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

7) Improving quality and utilization of poor quality roughages

8) Mineral mixture for increased animal productivity

9) Organic farming for sustainability and profitability

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

F. Practical

1) Identification of different female reproductive organs on morbid Genitalia

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

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

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

5) Palpation of female genitalia in live animal

6) Passing of AI gun in live animals

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

8) Pregnancy diagnosis at 90 days & beyond

9) Ear tagging

10) Record keeping and INAPH

G. Study visits

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

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

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

1. Veterinary Officers:

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

2. Support Staff:

Minimum one support staff is required with graduation in any discipline

I. Tests during Training:

Class Room Training:

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

J. Pass marks:

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

Part 2

Required Standard Facilities at AI Training Institute

1. Class room facilities:

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

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

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

2. Teaching aids

The class room must have the following:

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

3. Animal housing facilities for practical training

- For practice, the centre should have minimum one animal for six students.
- The centre may have its own animals for practical classes or tie up with nearby Gaushala or Panjarapol or slaughter house for practical training. Every trainee must pass AI gun in at least 20 animals during entire period of class room training.
- If the centre has its own animals, there should be a proper shed, a Trevis /an AI crate and a godown to store feeding material. Animals should be replaced every six months.

4. Lodging and boarding facilities for trainees

- The centre should have proper residential facilities for trainees including kitchen and minimum recreational facilities. Or
- The AI training Institutes may outsource the board and lodging facilities to an external agency through a formal agreement for at least a period of two years. The copy of the formal agreement should be kept for record for requirement at the time of Accreditation process.

5. Understanding with AI service providing organisations for practical training

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

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

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

6. Records/Documents for a AI training Institute

1) Trainees' records of registration

2) Trainees' daily attendance record

3) Records of successfully completed trainees

4) Summary of feedback obtained from trainees

5) Annual progress report / Training Brochure(optional)

Annexure – II

The prescribed format of application for accreditation

Date:

To be addressed to
Central Monitoring Unit

Subject: Award of Accreditation for AI Training Institute

Dear Sir,

We would like to get our AI training centre accreditated for Artificial Insemination training in bovine. We believe that our institute meets the Minimum Standards for Artificial Insemination Training Institutes as prescribed by DADF. The essential documents required for accreditation are enclosed. We also furnish below the particulars of our training centre.

PARTICULARS	**DESCRIPTION**
Name of the Training Institute (Applicant)	
Organisation with which the training centre is Affiliated	
Year of Establishment	
Detailed Address	
Telephone Nos	
Fax	
Email Id	
Website if any	
Head of the Training Unit with E mail Id & Mob no	
Contact Person besides the Head	
Details of the Persons/AI technicians trained by the centre during the **last two years**	(to be produced separately)

We request you to kindly arrange to accreditate our institute at the earliest.

Yours faithfully,

Head of the AI training Institution

Encl: List of documents

Annex – III

Format for Evaluation by the Central Monitoring Unit

Each criterion is to be evaluated against the details as given in the Minimum Standards for AITI by DADF.

Sr. No.	**Evaluation Criteria**	**Recommendations**		
		YES	**NO**	**Remarks**
1	Well designed course curriculum for Basic AI & Refresher AI training			
2	Optimum Training Duration			
3	Evaluation process for trainee during training			
4	Learning Resources (Teaching Aids/Training Materials)			
5	Arrangements for Practical & Field training			
6	Facility for Board & Lodging			
7	Faculty profile and Requirement			
8	Eligibility of Participants			
9	Maintenance of Records			

Annexure – IV

Format of Accreditation Certificate

Logo of Accreditation Authority

Full name of Accreditation Authority

with address

Accreditation No: **Date:**

CERFICATE OF ACCREDITATION

This is to certify that _____(name of the training Institute) is Accredited as an Artificial Insemination Training Institute for Bovines for a period of two years from_____(beginning date) to _____ (expiry date) subject to the terms and conditions of Accreditation.

Signature

Signed on : _____(date)

Annexure – V

Annual Return by the AI Training Institute:
(for the Year _____)

1. Accreditation No: _____ Date of Issue:_____
2. Name of the holder of Certificate of Accreditation: _____
3. Address of Holder of Certificate:
4. Names and qualifications of faculty members:
5. Number of AI Technicians trained: _____
8. List of AI Technicians trained:

Sr. No	Name of AI Technician granted certificate	Permanent address	Name of AI Service provider
1			
2			

.
We certify that all AI technicians trained by us have passed the final examination in the course and have undergone the practical training as prescribed by the Authority to perform artificial insemination in bovines. We also certify that all information provided above is true.

Place:

Date:

Head of AI Training Institute

Annexure – VI

Summary of the progress Report of the AI Training Institute

Year:

Sl No	PARTICULARS	DESCRIPTION	
		Current year	Last year
	TRAINING PROGRAMME		
1	Total AI training programmes conducted		
1a.	AI Basic		
1b	AI Refresher		
2	Total Trainees trained		
2a	AI Basic		
2b	AI Refresher		
	ALTERATION IN INFRASTRUCTURE & FACILITIES		
	New facilities created for AI training		
	Innovations, if any		
	OTHERS PARAMETERS		
	Any special achievement obtained by the training institute, please specify		

Place: Date:

Head of Training Institute

Signature

Annexure – VII

Application form for Renewal of Accreditation

Date:

To be addressed to
Central Monitoring Unit

Subject: Renewal of Accreditation for AI Training Institute

Dear Sir,

We would like to renew the accreditation of our Artificial Insemination training Institute for a period of two more years. The existing accreditation is scheduled to expire on_____(date). The required documents are enclosed herewith for your kind information and necessary action. The particulars of our training centre are furnished below:

PARTICULARS	**DESCRIPTION**
Name of the Training Institute (Applicant)	
Organisation with which the training centre is affiliated	
Year of Establishment	
Detailed Address	
Telephone Nos	
Fax	
Email Id	
Website if any	
Head of the Training Unit with E mail Id & Mobile no.	
Contact Person besides the Head	
Details of the Persons/AI technicians trained by the centre during the **last two years**	(to be produced separately)

We request you to kindly arrange to renew the accreditation of our institute for a further period of two years at the earliest.

Yours faithfully,
Head of the AI training Institute

Encl: List of documents

List of Documents:

The documents on the following particulars need to be enclosed along with the application for renewal of accreditation

1) Copy of the last accreditation certificate.

2) Other documents as mentioned at point No. 1.2.

3) Progress report of the training Institute for last two years.

Minimum Standards

And

Standard Operating Procedures

For

Artificial Insemination

Minimum Standards and Standard Operating Procedures for Artificial Insemination Services

Introduction

As average breeding values of bulls used for artificial insemination are much higher than those for natural service, rapid genetic progress is achieved when one uses AI. Moreover, compared to natural service, while using AI, there is much less risk of transmission of venereal diseases and animals having detrimental recessive traits. Besides, AI is economical. Proficient delivery of AI by service providers and AI technicians is judged by conception rates they achieve. To achieve maximum conception rates, it is necessary to follow certain essential protocols for delivering AI Services. Focus has to be on: genetic merit of bulls used; source and quality of semen used; maintenance of quality in transit, transfer, and storage; following correct technique in inseminating an animal; animal identification and complete follow up of each AI for pregnancy and calving etc. Failure to adhere to the protocols could lead to poor conception rate, and poor quality of new born animal. This document provides detailed guidelines on standard operating procedures to be followed and minimum standards to be maintained for providing AI services to farmers.

1. AI Services at farmers' doorstep:

The Minimum Standards aim at Quality AI Delivery at Farmers' Doorstep. AI services provided by a service provider shall be delivered preferably at the farmers' door step through Mobile AI Technicians located at strategic and logistically convenient locations. AI services should be provided to farmers in all villages and hamlets coming under the ambit of an AI Centre.

2. Breeding Policy:

The AI service provider shall ensure that the AI technicians follow the breeding policy of the State and gather information relevant to breeding goals envisaged in the breeding policy.

3. Quality of frozen semen:

Frozen semen shall be from frozen semen stations which have been following the minimum standards laid down by the Government of India for semen production and processing and graded "A" or "B" by the Central Monitoring Unit.

4. Semen storage and distribution:

AI Service Providers should:

- Store frozen semen doses in a well-ventilated, all weather safe storage area.
- Ensure a proper and foolproof identification system for each semen container, canister, and goblet so that a bull's semen can be traced with ease.
- While transferring semen doses, goblets should be well identified and precaution should be taken to see that each goblet has sufficient space for liquid nitrogen. Frozen

semen should not be exposed above liquid nitrogen as it may cause irreversible damage to sperm viability.

- All transfers of semen straws into goblets should take place under liquid nitrogen, in a polystyrene / thermocole box.

- Liquid Nitrogen should be replenished in both storage and distribution containers at regular intervals to ensure proper level of liquid nitrogen.

- Details of semen doses supplied to various AI technicians at the time of dispatch should be recorded. After each dispatch, records redefining the position of remaining doses should be updated.

5. Liquid Nitrogen procurement, storage & delivery:

Service provider shall have a bulk Liquid Nitrogen (LN) sourcing, storage and delivery facility. A schedule of LN replenishment to all AI centres on fortnightly / monthly / quarterly basis, whichever is convenient depending on the field containers shall be worked out by each service provider and shall be adhered to in the interest of maintaining quality of semen. A log book shall be maintained for all such schedules at different locations/ starting points of supply routes. The AI centre should have a bigger container for LN and FSD storage, preferably of 35 litre capacity, and a small portable LN container, preferably 2-3 litre capacity, to carry the FSDs to the place where the AI is carried out. The LN containers in the AI centre shall be protected sufficiently to avoid damage to container. AI centre should have a dip stick with critical level marks and a ready-reckoner for assessing the LN levels and quantity of LN in litres. Supply of LN should be either through portable LN tankers of 500 to 2000 litre capacity with gravitational flow or through the LN delivery pump and not by pouring LN from one container to another container.

6. AI guns, sheaths and AI accessories:

Stainless steel AI guns from an agency whose AI guns are tested and approved by the testing stations identified by BIS shall be used for AI. AI sheath shall be from an agency whose AI sheaths are tested by BIS. AI accessories like forceps and scissors shall be made of good quality stainless steel. Thermos flask and thermometer shall be of good quality.

7. Engagement of trained AI Technicians:

AI Service providers should ensure that they engage only those AI technicians who have undergone a training course in AI from a government recognised AI training institute and collect a copy of their training certificate at the time of appointment.

8. Standard Operating Procedures for AI Delivery:

The Standard Operating Procedures that should be followed by AI technicians in carrying out AI and handling semen doses is given at Annex A. AI services providers should ensure that

every AI technician has a copy of this SOP and he keeps it with him for reference whenever he goes for insemination work.

9. Animal Identification:

Every animal receiving AI shall be identified with an Ear Tag with a unique number and a barcode. These numbers shall enable generation of reports concerned to the individual animal and the associated information through an information system. 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 1 Ear Tag

Figure 2 Ear 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 with a minimum size of 55 x 65 mm. 12 digits are to be printed in two rows of six digits each. 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 3: Ear Tagged animal

10. Complete follow up of all AI for pregnancy and calf birth:

The service provider shall ensure 100% follow up of all AIs done by each AI technician. It is desirable to track AIs till calving and record all data related to pregnancy and calving including sex of new born calves. It is also important to generate relevant information and disseminate it to all concerned for monitoring and evaluation of AI services at all levels.

11. Conception Rate:

Quarterly / annual targets for conception rate for cattle and buffaloes shall be fixed for each AI technician, depending on the breedable animal population in his ambit and age of the AI centre. Conception rates shall be calculated on First AI as well as on Overall AI basis for cattle, buffaloes and combined for both cattle and buffaloes at an individual animal level, supervisor level, regional level and for the organisation. Optimum targets for first AI conception shall be about 50% with ideal services per conception less than 2 AIs per pregnancy.

12. Supervision, Review of Activities and Communication:

There shall be a hierarchy of supervisory mechanism. Every 20 AI technicians should have an AI supervisor. Every 60-65 AI centres should have a veterinarian to provide advisory services. A team of 200 AI technicians, 10 supervisors and 3 veterinarians shall form a region controlled by a Regional Officer. An effective communication network shall be in place for communication among the team members in a given area. AI technicians, supervisors and veterinary officers of an area shall meet once in a month for a review of technical programme, business transactions as well as for scheduling the extension programmes. There

shall be a monthly review meeting at regional level involving Regional Officer, veterinary officers and AI supervisors. Effective supervision is reflected in the accuracy of reporting, fixing the problems faced efficiently and effectively, acceptance of progress records by the system, promptness in business transactions and minimum backlogs.

13. AI Cost Calculations and Recovery:

Service provider shall work out the cost of AI delivery at farmers' doorstep (and the collateral services of follow up visits for PD and calving as well as for advisory services) on monthly/quarterly/annual basis. A model AI Cost calculation is provided at Annex B. Every AI Service Provider should work out their cost of providing AI service and decide on charging for AI services.

Annexure A

Standard Operating Procedures for Artificial Insemination and Semen Handling

General:

1. Keep the premises of the AI Centre clean and maintain all equipment, material and furniture properly.

2. Always keep the mobile phone available to respond to calls made by the farmers. In case there is likelihood of any delay, inform the farmer about expected time of visit.

3. Keep the breeding kit clean and before leaving the AI centre, check that the breeding kit has the following items:

- Scissors
- Thermometer/thaw monitor
- Thawing Tray
- Forceps
- Sheaths with sheath container
- AI Gun with container
- Plastic gloves
- Lubricant
- Isopropyl alcohol/ surgical spirit
- Tissue papers
- Clean towel
- Thermos-flask with hot water
- Tags, pins and tag applicator
- Apron

4. Be at the centre on the scheduled day and time of semen and liquid nitrogen delivery.

5. Promote AI services of the service provider in the assigned area.

6. Follow the tasks assigned from time to time by the supervisor /Area Officer.

7. While going for AI, always wear the uniform given by the service provider.

Semen handling:

1. Keep the liquid Nitrogen container in a location that allows easy withdrawal of semen doses & replenishment of semen and liquid nitrogen. The surrounding should be well ventilated, dry and dust free.

2. Clean AI gun, scissors and other accessories whenever they get soiled or at least once a week with hot water and air dry them. Sanitize the AI gun and the scissor with Isopropyl alcohol after drying. The AI Gun piston and the scissors should be wiped clean with water

after each insemination. Surgical spirit and soaps are lethal to semen, hence should not be used to clean equipments.

3. Maintain the liquid nitrogen level above the straw level in the portable container.

4. Measure the liquid nitrogen level of 35 litre containers weekly with the help of measuring scale provided. Maintain the record of measurements to monitor the evaporation rate of containers.

5. Carry the required semen doses in the portable liquid nitrogen container to farmer's door step. Never carry semen straws in pocket/ thermos-flask / polythene bags filled with water/ice etc.

6. Maintain an accurate semen inventory to lessen the risk of semen exposure.

Insemination Technique:

1. After reaching farmer's place, first identify the animal, take the history of animal reported in heat from farmer and check past-breeding records.

2. Examine the animal externally and ascertain that animal is in heat. The best signs of heat are: clear, transparent, viscous and ropy vaginal discharge; swollen and congested vulva; hypersensitivity; increased activities/movement and mounting behaviour; frequent urination; bellowing; drop in milk yield etc. If external signs are not sufficient animal should be examined for uterine tone, etc., before insemination.

3. Proceed with preparation of gun only when sure of heat.

4. Wash hands.

5. Have plastic gloves, sheath, gun, scissors, forceps, tissue paper, and clean towel ready before thawing semen.

6. Pour hot water from flask in the thawing tray and adjust temperature of water in the tray to 35 to 37 degree centigrade by adding cold or hot water.

7. Remove the semen straw from the container with forceps and not with hands. Before holding the straw by the forceps, cool its tips for few seconds. While taking out, raise the canister just high enough – not above the frost line. Remove the straw within 10 seconds.

8. Give a gentle jerk to the straw first to remove excess LN and quickly plunge it into thawing tray containing warm water at 35 to 37 degree centigrade for 20 to 30 seconds in the horizontal position.

9. Ensure that insemination gun and sheath also have temperature of around 37 degrees centigrade and not extremely hot or cold.

10. Take out straw from the tray and wipe the straw with clean towel. Note the bull number and batch number written on the straw.

11. Before loading the straw onto the gun, ascertain that air space in the straw is at the laboratory seal end.

12. Load the semen straw onto the gun and cut the straw at a right angle with a straight and sharp scissors just below the laboratory seal.

13. Take out the sheath by holding bottom of the sheath through a small hole at the corner of the sheath packet and place the sheath on the gun and secure the sheath firmly with o-ring lock. To ensure better hygiene, use individually packed sheaths instead of sheaths available in bulk packing.

14. Wear shoulder length plastic glove, preferably on left hand and hold the gun with right hand.

15. Ask the farmer to restrain the animal and hold the tail properly. Speak to the animal and make her calm down.

16. Lubricate the glove with the lubricant and lubricate the anus with gloved hand.

17. Gently put the gloved hand into the rectum by forming a cone with fingers. Clean the rectum by removing the faecal material.

18. Clean vulva with water and wipe with tissue paper.

19. Ask farmer to help spread the vulva.

20. Never allow gun's tip to touch external coat of the animal.

21. Insert insemination gun at approximately 30 degree angle till the gun reaches the fornix vagina to avoid entry of the gun into the urethral opening.

22. Hold the cervix firmly through rectum and slightly stretch it forward to unfold the vaginal folds.

23. Gently and smoothly pass the gun through the vagina to the opening of the cervical canal. Place cervix onto the gun, apply slight forward pressure on gun while manipulating the cervix slightly ahead of the gun.

24. Hold the external os of the cervix ahead of the gun's tip and negotiate vaginal folds and cervical rings to pass the gun through the cervix till the gun's tip reaches at internal os. Remember the process of passing the gun through vagina and cervix is the most difficult and delicate facet of insemination technique and perfection comes with practice and experience only, hence do not be impatient.

25. Feel the tip of the gun at internal os by gently moving the gun tip forward to ensure that the gun is in correct place (just at the entrance of the body of the uterus). Be certain the gun tip is not caught in a thin area between cervical rings or vaginal folds.

26. If the animal moves, STOP. Wait till the movement stops.

27. Hold the shoulder of the gun between your ring and middle fingers and push the gun piston with your thumb slowly (5 seconds) to deposit the semen at the entrance of the body of

the uterus to allow semen to drain into the body of uterus. Gently remove the gun and check for abnormal discharge and a complete semen deposit.

28. Recheck semen ID – bull and batch number.
29. Properly dispose off the sheath, gloves and tissue papers. Clean the gun if needed.

30. Record breeding information in the specified format provided. Enter details of AI in PDA, if PDA is in use.

31. Blood on the gun tip and on the gloves indicate that too much force was used to pass the gun – be gentle and patient with the animal.

32. Ask farmer to release the animal and let her calm down.

Post Insemination Advice to Farmers:

1. Ask farmer to keep the animal under observation for next 12-24 hrs.

2. If signs of heat persist even after 18-24 hrs, call for a repeat AI, otherwise observe for heat symptoms after 18-21 days and also after 36-42 days.

3. If animal does not repeat heat at 18-21 days intervals for two consecutive times, call AI Technician for pregnancy diagnosis after 2-3 months from the date of insemination.

4. Keep body of the animal cool by keeping animal in the shed and sprinkling water, if required.

5. If an animal does not conceive even after three consecutive AIs, farmer should be advised to get the animal examined by a veterinarian and follow his advice.

Post insemination follow-up:

1. Follow each and every animal inseminated after around 21 days to find out whether it has repeated.
2. Follow each and every animal inseminated for pregnancy diagnosis after 2-3 months and record the date and result of pregnancy diagnosis in the format provided and send it to the Area Office on a monthly basis. Enter details of PD in PDA, if PDA is in use.

3. During pregnancy diagnosis, corroborate the findings with date of insemination and in case of mismatch or otherwise also, ask farmer about the post AI events to know whether animal remained in heat for a long period or came again in heat after the insemination. If yes, after how many days? And whether farmer availed AI services of some other service provider or arranged natural service during the same or subsequent heat.

4. Follow each and every pregnant animal and record calving details of the animals inseminated in the format provided. Enter details of calving in PDA, if PDA is in use.

5. Maintain all records related to artificial insemination, pregnancy diagnosis, and calving and money transaction.

6. Advise farmers on proper heat detection, feeding, management and healthcare of animals as suggested by the experts. Also advise on the care and management of animal during advance pregnancy and after calving, including care and management of new born calves.

Annexure- B

COST OF ARTIFICIAL INSEMINATION

The following expenditure items may be considered while arriving at AI cost:

A.

1. Direct material:

Variable Cost:

Cost of semen doses, sheaths, gloves, lubricant, etc.

2. Direct labour:

Salary/Retainership/Commission/incentives to AI Technicians

3. Direct Overhead:

Cost of liquid nitrogen used, cost of distribution of semen & liquid nitrogen

Total Variable Cost (1 to 3)

B.

1. Staff salary

Fixed Cost:

2. Administrative cost – Stationery, Telephone, Propulsion charges, uniform, AI kit etc.

3. Cost of promotion and extension

4. Cost of identification and ICT

5. Interest

6. Depreciation

Total Fixed Cost (1 to 6)

Total Cost = Variable Cost + Fixed Cost = (A+B)