

NDDB

Health protocols for recipient herd

of imported embryos under NDP-I (Draft)s

AH GROUP

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Introduction

Under NDP-I, it is proposed to import 1200 each of high genetic merit Jersey and HF embryos, which would be used in breed improvement programmes throughout the country.

Certain agencies with expertise in embryo transfer technology have been identified to carry out this task so that the success rate of pregnancies and calving are high. Towards this, it is also envisaged to develop a recipient herd under each agency which would receive the embryos and produce the high genetic merit Jersey and HF animals.

However, our country being endemic to many diseases, it is very important that the females in the recipient herd are disease-free and maintained in such a way that prevents any disease causing agents, especially those that can be transmitted through semen, from entering, spreading or leaving the premises, either through infected fomites or as infected bulls, which would be further used by various semen stations to produce semen thus creating a vicious cycle of transmission.

To this effect, a health protocol for recipient herds is being formulated. The various procedures that are required to be followed for effective implementation of the protocols are elucidated in this document.

1 Animal Health protocols to be followed in the recipient herd

All the animals in the recipient herd are to be uniquely identified by ear-tagging.

1.1 Testing protocols in the recipient herd

1.1.1 Compulsory testing & culling

- The herd shall be **negative** to the following tests.
- Animals found positive for any of the disease shall be immediately **isolated and culled** from the herd (maximum within 2 days).
- The remaining animals in the **herd** shall be tested for the disease (to which the animal(s) tested positive) at a minimum interval of 30 days till **two consecutive tests** are **negative**.
- In case of bTB and JD, the testing interval shall be not less than 45 days.
- The following protocols shall be followed:

S.no	Disease	Test	Testing at or by officers of	Periodicity
1	Bovine TB(bTB)	Single Intra Dermal (SID) test	CDDL/RDDL/ NDDB/PD_ADMAS /HSADL	Once in six months
2	Johne's Disease (JD)	SID test/ELISA		
3	Brucellosis	ELISA		
4	BVD	Antigen ELISA		

1.1.2 Compulsory testing

- The herd shall be **negative** to the following tests.
- Animals found positive shall immediately be isolated and either **culled or treated**.
- If treated, the **animal** shall be tested again after a minimum of 21 days after completion of treatment with **negative** results.
- Treated animals that are test negative can be **retained** in the herd.

S.no	Disease	Test	Testing at or by officers of	Periodicity
1	Bovine Genital Campylobacteriosis	Agent Isolation	CDDL/RDDL/ NDDB/PD_ADMAS	Yearly

	(BGC)			
2	Trichomonosis	Agent Isolation		

1.1.3 Sero-prevalence testing for IBR, BVD, BT & Neosporosis

- The following tests are to be carried out to estimate the **sero-prevalence** of the disease in the recipient herd.
- Sero-positivity is **not** a criterion for culling. However, appropriate management measures shall be undertaken (segregation of positives etc) to reduce the incidence of the disease in a phased manner.
- Use of **IBR sero-positive females** for ET **shall be avoided**.

S.no	Disease	Test	Testing at or by officers of	Periodicity
1	IBR	ELISA	CDDL/RDDL/ NDDB/PD_ADMAS/ HSADL	Yearly
2	BVD	Antibody ELISA		
3	BTB	ELISA		
4	Neosporosis	C-ELISA		

1.2 Vaccination and sero-monitoring protocols

1.2.1 Vaccination and sero-monitoring protocols in the recipient herd

The following vaccination schedule shall be followed in the recipient herd:

S.No	Disease	Schedule	Remarks
1	Foot and Mouth Disease (FMD)	6 monthly- preferably during March/April and August/September	Booster after 1 month after initial dose.
2	Infectious Bovine Rhinotracheitis (IBR)	6 monthly	Booster after 1 month after initial dose.
3	Haemorrhagic Septicaemia (HS)	Annually during March /April	In endemic areas only
4	Black Quarter (BQ)	Annually during March /April	
5	Anthrax	Annual	In endemic areas only
6	Theileriosis	Once in three years.	Only for cross bred and exotic animals
7	Sero-monitoring for FMD	0 day and 30 day post vaccination	All animals in the recipient herd to be covered

1.2.2 Vaccination protocols in the ring vaccination zone

- The radius of 10 Km around the recipient herd shall be considered as the ring vaccination zone.
- A minimum coverage of 80% of all cattle and buffalo shall be ensured by the State AHD.
- The recipient farm in-charge shall be the convener of the monitoring and coordination committees to be formed to implement the vaccination programme.
- All the vaccinated animals in the ring vaccination zone shall be ear-tagged.
- The following vaccination schedule shall be followed:

S.No	Disease	Schedule	Remarks
1	Foot and Mouth Disease (FMD)	6 monthly- preferably during March/April and August/September	
2	Haemorrhagic Septicaemia (HS)	Annually during March /April	In endemic areas only
3	Black Quarter (BQ)	Annually during March /April	
4	Anthrax	Annual	In endemic areas only
5	Sero-monitoring for FMD	0 day and 30 day post vaccination	Random sampling to be done. Please see the details on sero-sampling below.

1.2.3 Sero-sampling in the ring vaccination zone

With reference to FMD, if a sampling framework is being followed by the State AHD at the district level, no separate sero-monitoring is required. Hence, the data on sero-monitoring may be sourced from the AHD for the last 2-3 rounds of vaccination (i.e before the commencement of project), pertaining to the ring vaccination villages if available, or for the respective district in which the recipient herd is situated. Subsequent sero-monitoring reports may be also maintained with the Project.

The sampling period is very important in getting a correct picture of the antibody response in the population. Ideally, the sera-samples have to be collected at 0 day (on the day of vaccination) and on the 30th day post

vaccination (+1week max). While recording the sample details, it must be ensured that the date of vaccination and the date of collection are correctly recorded along with the sample. The project personnel may ensure the correct time of sera-sampling in the ring vaccination villages in coordination with the State AHD if it has been included in the sampling frame.

However, if the Project wishes to carry out sero-sampling on its own in the ring vaccination villages around 10 Km radius of the semen station, random sampling can be carried out based on the following formula:

$$n = z^2 \times p \times q / e^2$$

Where n = sample size z=1.96, p = percentage of population that is protected (may be obtained from previous sero-monitoring reports of the State AHD or assumed if unknown) q=1-p and e= % of error.

Eg. If the percentage of protected population after FMD vaccination is estimated at 80% at 95% confidence level, then the sample size for sero-sampling would be : $n = (1.96)^2 \times 0.8 \times 0.2 / (.05)^2 = 245$ samples.

Once the sample size is decided, villages in the ring vaccination area are randomly selected and equal number of samples (say 5, 10 , 20 etc) are distributed to each of the randomly selected village ensuring proper spread (preferably from four corners and centre of the village) while collection.

The same process holds true for other vaccinations also.

1.3 Disease prophylaxis protocols

- It shall be followed in herds located in endemic areas.
- It shall be followed in recipient herds in non-endemic areas wherein disease has been reported.

S.No	Disease	Prophylaxis	Periodicity	Remarks
1	Anaplasmosis	Two doses of long acting oxytetracycline @ 20 mg/Kg BW at an interval of 1 week. (may eliminate carrier state)	Annual	In high endemic areas, 2 doses of Imidocarb dipropionate @5 mg/Kg at 14 day interval may be a better option. May be synchronized with Leptospira prophylaxis.
2	Leptospirosis	Single IM dose of long acting tetracycline (20mg/Kg BW)	Annual	To be given towards the end of monsoon.

3	Trypanosomiasis	Single dose of Isometamidium Chloride (1-2mg/Kg BW) or Quinapyramine (5 mg/Kg BW)	Annual	At the onset of monsoon.
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1.4 Tick and worm control

- A topical acaricide shall be applied or an injectable endo-ecto parasiticide administered on a periodic basis as per direction of the veterinarian.
- A broad spectrum anthelmintic may be administered every six months before and after monsoon.
- A broad spectrum anthelmintic shall be administered to pregnant animals around calving time and 6-8 weeks after calving.
- The drug class of acaricide or broad spectrum anthelmintic being used should be frequently changed to avoid resistance from developing.

2 Protocols for induction of females into the recipient herd

2.1 General considerations

- The selected female shall be in good health and should have shown signs of heat at least once to be sure that the animal is cycling normally.
- The uterus shall also not have any anatomical abnormalities (eg. kinked cervix etc).

2.2 Testing at farmers premises

2.2.1 Disease testing of the farmers' herd

- **All in-contact cattle and buffalo** (including the dam of the animal to be selected) at the **farmer's homestead** shall test **negative** to the following diseases:

S.no	Disease	Test	Testing at or by officers of	Timeline
1	Bovine TB(bTB)	Single Intra Dermal (SID) test	CDDL/RDDL/ NDDB/PD_ADMAS/ HSADL/Farm personnel	The testing should be completed within 15 days of selecting the animal.
2	Johne's Disease (JD)	SID test/ELISA		
3	Brucellosis	ELISA		

2.2.2 Disease testing of the animal to be selected

- The selected female shall test **negative** to the following tests before being shifted to the quarantine.
- Animals found positive for BGC & Trichomonosis may be **treated**.
- If treated for the above two diseases, the **animal** shall be tested again after a minimum of 21 days after completion of treatment with **negative** results.
- The selected animal shall be shifted to quarantine within 15 days of receipt of negative results for all the tests.

S.no	Disease	Test	Testing at or by officers of
1	Bovine TB(bTB)	Single Intra Dermal (SID) test	CDDL/RDDL/ NDDB/PD_ADMAS /HSADL/Farm personnel
2	Johne's Disease (JD)	SID test/ELISA	
3	Brucellosis	ELISA	
4	BVD	Antigen ELISA	
5	Bovine Genital Campylobacteriosis (BGC)	Agent Isolation*	
*May be treated and retested with negative results before selection			

2.2.3 Assessing sero-prevalence of selected animal for IBR, BVD, BT & Neosporosis

- The following tests are to be carried out to estimate the status of the disease in the selected animal.
- Appropriate management measures shall be undertaken (segregation of positives etc) to reduce the incidence of the disease in a phased manner.
- Sero-positivity is **not** a criterion for selection. However induction of **IBR** sero-positive **shall be avoided**.
- The test may also be done while in quarantine.

S.no	Disease	Test	Testing at or by officers of
1	IBR	ELISA	CDDL/RDDL/ NDDB/PD_ADMAS/ HSADL
2	BVD	Antibody ELISA	
3	BTB	ELISA	
4	Neosporosis	C-ELISA	

3 Animal Health protocols to be followed in quarantine

3.1 Testing protocols in quarantine

- The selected animal shall be maintained preferably in isolation for a minimum period of 90 days with two tests being carried out for the following diseases with **negative** results.

S.no	Disease	Test	Minimum lag period between 2 tests
1	Bovine TB(bTB)	Single Intra Dermal (SID) test	45 days
2	Johne's Disease (JD)	SID test	45 days
3	Brucellosis	ELISA	30 days
4	BVD	Antigen ELISA	
5	Bovine Genital Campylobacteriosis (BGC)	Agent Isolation*	30 days

*The animal may be treated and retested with negative results before shifting to the recipient herd

- In the event of any animal testing positive(for diseases S.no1-4), the animal is immediately culled and the remaining in-contact animals are put on extended quarantine for a further period of 90 days repeating the test (twice) for the disease for which positivity was seen.
- On further testing during extended quarantine if any animal tests positive to diseases (S.no 1-4), all the in-contact animals are culled.
- It is ideal to maintain each animal in isolation while in quarantine so that only the positive animal need to be culled, if maintained in groups, the entire lot may have to be culled in case any other animal turns positive in extended quarantine.
- Animals found positive for BGC may be **treated**.
- If treated for BGC, the **animal** shall be tested again after a minimum of 21 days after completion of treatment with **negative** results.
- The last test shall be conducted within the last 2 weeks of quarantine and animals negative to all the tests shall be shifted to the recipient herd facility within 15 days of receiving the test results.

3.2 Vaccination protocols in quarantine

- All selected animals shall be vaccinated against FMD and, HS, BQ and anthrax (in endemic areas). A booster dose shall be given after 1 month for FMD.
- Sero-monitoring of all animals for FMD shall be carried out at 0 and 30th day post vaccination to assess sero-conversion.
- All selected animals shall also be vaccinated against theileriosis.

3.3 Disease prophylaxis protocols in quarantine

- The following disease prophylaxis protocols shall be followed while the animals are in quarantine:

S.No	Disease	Prophylaxis	Remarks
1	Anaplasmosis	Two doses of long acting oxytetracycline-@20 mg/Kg BW at an interval of 1 week, during start of quarantine.(may eliminate carrier state)	In high endemic areas, 2 doses of Imidocarb dipropionate @5 mg/Kg at 14 day interval may be a better option.
2	Leptospirosis	Single IM dose of long acting tetracycline (20mg/Kg BW)	May be synchronized with Anaplasmosis treatment.
3	Trypanosomiasis	Single dose of Isometamidium Chloride (1-2mg/Kg BW) or Quinapyramine (5 mg/Kg BW) during start of quarantine.	In high prevalent areas, a prophylactic dosage may also be given at the onset of monsoon.
4	Theileriosis	Single dose of Buparvaquone @ 2.5 mg/Kg BW I/M during start of quarantine.	

3.4 Tick control

3.4.1 Topical acaricide application

- A topical acaricide shall be applied immediately on arrival at quarantine.
- A second application shall be made at last 15 days of quarantine.
- Further applications may be carried out if required as directed by the veterinarian.
- The drug class of topical acaricide being used shall be frequently changed to avoid resistance from developing.

3.4.2 Injectable ecto-endo parasiticide administration

- One dose 7-14 days of quarantine (keeping an interval of 2-3 weeks from the previous treatment)
- One dose during the 15 days of quarantine.

3.5 Worm control

- A broad spectrum anthelmintic shall be administered immediately on arrival at quarantine (0 day).
- A broad spectrum anthelmintic shall be administered 20-30 days into the quarantine
- A broad spectrum anthelmintic shall be administered not exceeding one week before shifting from quarantine or three weeks before any vaccination.
- The drug class of broad spectrum anthelmintic being used should be frequently changed to avoid resistance from developing.

4 Health protocols for neonates born through ET

The following practices shall be adopted to improve the chances of survival of the valuable calves produced through ET:

S.No	Practice	Farm	Remarks
1	Dipping (not merely swabbing) of navel with Tr.Iodine	To be done immediately after birth and followed 12-24 hrs later. To be done with Tr.iodine (minimum 7%) beforehand.	Greatly reduces chances of serious infections like sepsis/naval/joint ill.
2	Colostrum feeding	Adequate quantity of colostrum to be fed within 1-2 hours to avoid Failure of Passive Transfer (FPT) calves.	Greatly reduces the chances of the animal succumbing to infections.
3	Deworming	First deworming may be carried out at 7-10 days of age and may be carried out monthly till six months of age.	
4	Checking the health of the animal	Check the animal for signs of joint ill/navel ill/ diarrhoea, general health etc	Timely aggressive treatment will need to be provided to such calves in order for it to survive.
5	Weight monitoring	Daily/weekly weight monitoring	Minimum weight gain of 500 g per day for CB and 400g per day for Indigenous breeds and Buffaloes.
6	Temperature Monitoring	Twice daily	Immediate intervention in case of variation.
7	Body condition	Hydration levels to be checked by skin test on a daily basis especially	Appropriate measures to be taken to rehydrate (i/v and

	monitoring	during scouring.	oral) and to correct acidosis and hypoglycaemia.
8	Cleaning and disinfection of pens	Twice weekly and before and after animals are quartered	Twice weekly and before and after animals are quartered
9	Testing of calf starter/feed/milk replacer	Testing for nutrient content / aflatoxins/coliforms.	Every fresh batch procured may be tested before usage.
10	Coccidiosis	Amprolium @ 5mg/Kg BW/day orally for 21 days from the date of arrival.	For calves up to one year of age Need to be done only if coccidiosis is a problem.

5 Information network

- The AH module of INAPH shall be used to capture all the animal health related in the recipient herd and in the ring vaccination zone around the recipient herd.