



ACTION PLAN

FOR PREPAREDNESS, CONTROL AND CONTAINMENT OF

AFRICAN SWINE FEVER



GOVERNMENT OF ASSAM
ANIMAL HUSBANDRY AND VETERINARY DEPARTMENT

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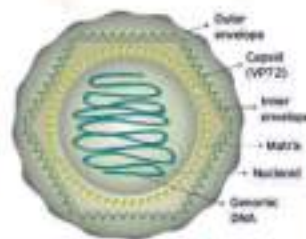
Action Plan

Introduction

The pig sector plays a key role as a source of animal protein due to their fast growth, efficient feed conversion, quick turnover, and prolificacy. The pig sector in Assam has grown steadily over the past decades. In Assam, most pigs are kept in traditional, small-scale, subsistence production systems. This traditional system of pig farming is characterized by its low biosecurity, outdated husbandry practices and technologies, poor awareness and compliance with animal health regulations. Therefore this sector is vulnerable for disease disasters. In Assam African Swine Fever was first detected in Jonai subdivision of Dhemaji district. Spread of the disease to newer areas occurred due to various factors including inadequate awareness about the risk factors associated with this novel disease

African swine fever (ASF) is a highly infectious hemorrhagic viral disease of pigs, and wild boar/feral pigs and species of all breeds and ages are susceptible. ASF is caused by unique enveloped double stranded DNA virus with icosahedral morphology. It is currently classified as the only member of the the Asfarviridae family, genus Asfivirus. It causes very high mortality in both domestic and pig population and mortality may be as high as 100%. ASF does not infect human or other livestock species (not Zoonotic). Hence, it is not a public health risk. The incubation period varies from 4 to 19 days.

African swine fever is a notifiable disease under the regulations of World Health Organization. The export of pig or pig products from a country where African Swine fever is prevalent is prohibited under international norms. Moreover, trade of pigs and pig product originating from a state having the disease will also suffer even within the country and the neighbouring states. Therefore developmental schemes for the sector will suffer depriving the interested entrepreneurs. Therefore control and containment operation is to be undertaken aggressively for eradication of the disease from the soil of Assam. This Action Plan is designed to address this issue by explaining every step of the control and containment program.



Susceptibility

All pigs are susceptible to ASFV regardless of whether they are kept or feral, however the risk of infection and control measures applied to kept and feral pig populations do vary.

Symptoms

The clinical syndromes vary from per-acute, acute, sub-acute to chronic form depending on various factors like virus virulence, swine breed affected, route of exposure, infectious dose, and endemic status in the area.

Per-Acute form: High fever (41- 42°C) and Sudden death within 1-3 days.

Acute form: High fever of 40-42°C with reddening of skin of ear tip, tail, ventral aspects of chest and abdomen, and death within 6-9 days for highly virulent strains, or 11-15 days for moderately virulent isolates. Mortality upto 90-100 %.

Sub-acute form: Slight fever, reddening of skin especially death within 15-45 days, mortality 30-70%.

Chronic form: The lethality rate in this form is 30% and common in countries where ASF is present for long. Pigs show irregular peaks of temperature, respiratory signs, necrosis in skin, ulcer, arthritis, joint swelling.

Post-mortem (PM) Lesions

Diagnosis is the first step in the process of controlling or containing a disease. Accordingly, it is



necessary for Veterinarians to observe PM lesions to support clinical diagnosis of the disease.



Necrotic lesion on the skin of the ear



Necrotic lesions on skin of the abdomen



Distinct hyperaemic areas on skin of neck, chest & abdomen

- **Acute form:** Haemorrhages in renal and gastro-hepatic lymph nodes, congestive splenomegaly, cutaneous ecchymoses on legs and abdomen, petechiae in mucus membranes of larynx, bladder and visceral surfaces, Oedema in mesenteric structures.



Enlarged & haemorrhagic lymph nodes



Highly haemorrhagic cervical and renal lymph nodes

- **Chronic form:** Focal caseous necrosis and mineralization of lungs, enlarged lymph node. Acute forms can be confused with CSF and other diseases like swine erysipelas, pasteurellosis, pseudorabies and other septicaemic conditions. Therefore, laboratory confirmation is important and a must for confirmatory diagnosis.

Transmission: The virus can spread through blood, tissues, secretions and excretions of sick and dead animals. Recovered pigs may also act as carrier. There are various modes of transmission:

- Direct Transmission:
 - contact between sick and healthy animals
- Indirect Transmission:
 - feeding of garbage containing ASF infected meat (ASFV can remain infectious for 3– 6 months in uncooked pork products)
 - fomites include premises, vehicles, equipment, clothes
- Biological vector:
 - Soft ticks of genus *Ornithodoros* (prevalence in Assam is under study)

Laboratory Diagnosis: The laboratory diagnosis consists of:

- Identification of virus/antigen/nucleic acid:
- Virus isolation
- Detection of antigen in smears or section of tissues using FAT
- Detection of genomic DNA by PCR or real-time PCR
- Serological tests:

Pigs that survive natural infection develop antibodies 7-10 days post infection and can be tested for antibody detection by ELISA, IFAT, IPT, IBT.



I. Pre-outbreak preparedness

I.1 Surveillance - Need to be in a state of alertness and preparedness

I.1.1 Surveillance to include both domestic pig and wild boars

Surveillance is the most important part of the strategy to control and contain African Swine Fever. Assam has a pig population of nearly 20.99 lakhs (20th Livestock Census, 2019), in both commercial and backyard sector. About 22% of the total pig population of the State are either exotic or crossbred out of which approximately 40% are reared as commercial entity, however, 78% of the total population is in the backyard sector with nonexistence biosecurity norms. Furthermore, most of these backyard scavengers and wanderer pig of fringe villages of National Parks/ Wild Life sanctuary/ protected Forest area pose a threat to the wild boar population. To eradicate this highly infectious haemorrhagic viral disease of pig responsible for causing near 100% mortality to the naïve pig population and to prevent the disease gaining endemic status in the wild pig population where the control and containment of the disease will be herculean task, surveillance will therefore, have to include both domestic and wild pig population

I.1.2 Piggery owner is responsible for reporting unusual mortality and sickness in pigs

In accordance to the Provision under *Clause 4 sub section 1 of The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009*, the pig owner, especially commercial piggery owners including consultants, franchises, service-providers and those related to rearing pig in one way or the other are individually and collectively responsible to immediately report any unusual mortality and sickness in pigs to the Government. Failure to do so is gross negligence with serious implications for animal health. Social responsibility on part of non-governmental organization, public bodies or the village panchyats requires immediate reporting of such mortality to nearest veterinary institution so that process for early disease verification can be initiated.

1.1.3 Routine Surveillance

A system of taking random samples of pig from different parts of the State for the purpose of surveillance against ASF will be initiated as per the sampling frame as notified by the National Institutes viz. ICAR-National Institute of High Security Animal Disease (NIHSAD), Bhopal and ICAR-National Institute of Veterinary Epidemiology & Disease Informatics (NIVEDI), Bengaluru will be notified in due course.

Further, in meantime the District Animal Husbandry & Veterinary Officer are advised to adequately sensitize all the Veterinary officers and para-veterinary professionals to investigate any suspicious death in pigs arousing attention for African swine fever intrusion into the area. Routine surveillance plans for appropriate sampling in the live pig markets and pig meat selling areas may be undertaken on bazar/haat days. Further, concentration should also be accorded on the villages having sizable pig population and pig dense/concentration areas on the fringe wild-life sanctuaries / National Parks etc. having population of wild boars.

The Director, Animal Husbandry & Veterinary Department will coordinate with the Chief Wild Life Warden while preparing the routine Surveillance Plan (to be prepared after guidelines from NIHSAD & NIVEDI). The Animal Husbandry & Veterinary Department and the Forest Department will jointly approach for coordinated surveillance in accordance with the State Plan.

1.1.4 Active and targeted surveillance

In addition, a system of active and targeted surveillance will be initiated to include immediate response to any sickness/ mortality and surveillance of domestic pigs and wild boar (especially those areas having pig concentrations around them).

1.1.4a Immediate response to sickness and mortality in Pigs

As provided under I.1.2 the pig owner is responsible for reporting unusual mortality etc. in his herd. In addition, the field Veterinary Institutions will ensure detection and reporting of any unusually high mortality and sickness in pig and wild boars etc. within 24 hours of its occurrence along with



collection of PM samples from at least 1 (one) dead carcass and 3 three blood samples from in contact pigs. Regular visits to high density piggery units both backyard and commercial by Veterinary Officer is a must for this purpose. The District Animal Husbandry & Veterinary Officer (DVO), and the entire machinery of the District Veterinary Department in every district will remain in a state of full alertness and preparedness. All Veterinary doctors in the district (Government, Semi-Government or private) should report to the DVO, in case of any above average sudden mortality or any sickness which cannot be readily diagnosed in pig as well as wild boars.

Similarly the Forest Department will also maintain vigilance regarding any mortality in wild boars, in sanctuaries etc. in the District and report any such suspicion/ mortality/sickness in relation to the wild boars in the sanctuary immediately to the Senior Forest officials and the State Animal Husbandry Department.

Public awareness about unusual mortality and sickness in pigs with greater emphasis on the adoption of biosecurity protocols should be created so that informal and supplementary means for getting information about unusual mortality and sickness in swine species can be developed which will assist in carrying out physical and clinical surveillance. The awareness programmes as IEC campaigns for pig farmers, campaigns during animal health camps through print and electronic media will provide additional impetus in the control, containment and eradication of the disease.

I.1.4b Integration of strategy for surveillance of domestic pigs and wild boars

An integration of strategy of surveillance of domestic and wild pigs will require co-ordination between State Departments of Animal Husbandry and Forests. The District Animal Husbandry & Veterinary Department and Forest Department will prepare details of areas of pig concentration and areas of wild pig populations visiting the fringe villages with sizable domestic pig population. The two Departments would then be consolidate the data so obtained will be the core and critical areas to prioritize the surveillance strategy. It would be desirable to draw up lists of areas mentioned above and indicate them on a State map for further circulation to all concerned.

I.2 Sample Collection, Packing & Transportation

I.2.1 Attention to quantity, quality of samples etc.

Attention is drawn to all the Veterinary Officers for proper collection, packing and transportation of samples, and give particular attention to the quantity and quality of samples and maintenance of strict personal biosecurity and not be fomite for transmission of the disease to new areas.

I.2.2 Guidelines for collection, packing & transportation

The following guidelines to be strictly adhered to in this regard:

- i) District A.H & Veterinary Officer/ Veterinary Officer must distinguish at their level between unusual mortality/ sickness and normal incidence of mortality and sickness of pigs. Samples in all situations of mortality and sickness, usual or unusual, will result in wastage of time and labour. Samples in case of unusual mortality / sickness raising suspicion of African Swine Fever to be dispatched to immediately to NERDDL However, the samples in case of normal incidence of mortality/ sickness can be test at the District Disease Diagnostic Laboratories (DDDLs).
- ii) It is absolutely necessary to ensure the quality of the samples being sent to Laboratory.
- iii) The samples should be packed in isotonic phosphate buffered saline (PBS), pH 7.0-7.4 and dispatched on ice. In case where PBS is not readily available, than samples should be dispatched in ice ensuring that the samples will reach laboratory within 24 hours of collection.
- iv) The samples should be packed area-wise. For example, samples from one village should be packed together so that, if required, testing of samples is facilitated by pooling.
- v) It is highly desirable that the cold chain is maintained while dispatching the samples and utmost care should be taken that the outside of the sample container is properly cleaned and sanitized with recommended disinfectants prior to shipment.
- vi) The samples should be invariably accompanied by the proforma prescribed placed at Annexure II.



I.3 Role of District Deputy Commissioner

Control operations require co-ordination of activities of several agencies especially at district level. District Deputy Commissioner will play a central and co-ordinating role especially concerning aspects of quarantine, closure of shops, compensation (payment and verification), movement control, ban on sale of pork related products, clean-up, maintaining supply lines for equipment etc. Therefore, this action plan may be thoroughly discussed with the District Deputy Commissioner to enable them to assume responsibility of co-ordination of control & containment operations in case of outbreak. Other revenue officials should also be familiarized with all aspects of this Action Plan to assist the Deputy Commissioner. Staff of Environment & Forest etc. is required to be trained intensively in respective sectors of unusual mortality of wild pigs.

I.4 Rapid assessment of Preparedness

In order to facilitate immediate action in case the samples test positive and an outbreak is confirmed, the District A.H & Veterinary Department will rapidly assess its preparedness to carry out operations.

I.5 Stocking and sourcing of equipment / instruments / machinery etc. required for conduct of operations

Several kinds of equipments/machinery such as gunny bags, plastic sheets, plastic bags, sodium hypochlorite, formalin, sodium Phenobarbital, syringes and needles, spray pumps suitable for crops, gum boots, PPE kits, JCB machines, flame guns, LPG cylinders, fire wood, kerosene and coal etc., are required for the conduct of operations. Vehicles and machinery may have to be hired in situation of outbreak.

II. Steps to be taken in case of suspicion of outbreak of African Swine Fever

II.1 DVO to visit the site immediately on receipt of preliminary information

In case of suspicion of outbreak of African Swine Fever, such as receipt of any preliminary report regarding unusual sickness or above average mortality of pig as well as wild boars at a place from any other source whatsoever, the DVO/ Disease Investigation Officer (DIO) shall visit that place immediately to personally ascertain the circumstances and facts of the case.

II.1.1 Veterinary Officers to be provided with kits etc.

The Investigation Officer should be equipped with a 'kit' (indicated in Annexure VI) so that he is in a position to conduct preliminary and clinical investigations and, if necessary, collect required samples for dispatch for laboratory analysis. All investigation officers who are required to visit places where pigs are kept should pay utmost attention on personal biosecurity and not be a carrier of the disease to new areas.

II.2 Preliminary and clinical investigations by DIO

II.2.1 Protective gear & equipment for DIO/ BVO/ VO

The Disease Investigation Officer (DIO) must carry the following items when proceeding for disease outbreak investigation:

- i) Leak proof water resistant container;
- ii) Ice box for carrying samples;
- iii) Two pairs of latex gloves;
- iv) Five autoclavable plastic bags;
- v) Five black rubbish bags;
- vi) Disinfecting solution.



II.2.2 Information to be collected

The DVO and DIO should collect the following information:

- i) Preliminary identification of the production unit and subunits including topography of the farm and identification of the specific unit for which the suspicion has been reported;
- ii) Level of bio-security on the farm/premise
- iii) Number of pig animals on the farm/premise;
- iv) Identification of staff as well as vehicles directly involved with that unit;
- v) Recent movement of people, equipment, vehicles and animals/ pigs;
- vi) Anamnestic data (data relating to immune response of CSF, FMD etc).

II.2.3 Epidemiological Inquiry Report

The DIO should carry out a clinical investigation with the aim to establish the clinical situation on the farm, must be performed on all susceptible species present on the farm, and it must begin from the most peripheral units. Particular attention must be paid to any vaccinations performed. All this information must be reported in the epidemiological inquiry report (Annexure VIII). While filling in the epidemiological inquiry form, it is important to ensure inter alia that:

- i) Pig movements are recorded up to 20 days prior to the onset of the first clinical signs;
- ii) Movement of all people (staff, relatives, servicing personnel, veterinarians etc.) who had access to the farm must be recorded;
- iii) All vehicles, regardless of their contact with animals, which have had access to the farm must be reported.
- iv) All the pigs present age/ body weight wise must be identified, and the date of onset of clinical signs, description of clinical signs and reported percentage mortality must be prepared.
- v) Data on date wise death of pigs is also to be recorded

II.2.4 Actions after investigation

If the preliminary and clinical investigations indicate that it is an unusual situation indicating suspicion of African swine Fever, then the DVO has to ensure that steps as indicated in the subsequent paragraphs are taken immediately.

II.3 Collection of samples and dispatch for laboratory tests

II.3.1 Type of samples to be sent to laboratory

In an already infected area/State, all suspicious mortality in pig may be suspected for African Swine Fever and post mortem conducted on the carcass ensuring adequate bio-security and proper disposal of carcass. The following pathological samples must be collected and sent immediately to NERDDL, Guwahati:

- i) Target organ for sampling: Spleen, Kidney, lymph nodes. Small parts of the organ from the same animal can be pooled (mixed) and put in 5 ml screw capped vial.
- ii) Bone marrow from decomposed carcasses;
- iii) EDTA (never heparinised) Blood
- iv) Serum in case of sero-surveillance

Samples must be packaged appropriately (in leak proof containers, wrapped in at least two plastic bags), to avoid dissemination of the infectious agent to the environment, and transported in a cold chain to the laboratory inside a polystyrene box (ice box) containing icepacks. The polystyrene box must be appropriately disinfected before leaving the premises. The samples must be accompanied by the appropriate form (see Annexure). Following collection of samples the DIO and his assistants should invariably be satisfied that he is not acting as a vehicle for disease to new areas, collect all sterilizable equipment in an autoclavable bag, which is sealed and inserted into a second bag, which is disinfected externally. All single use materials, sheets of paper, disposable gear/gloves and shoe-covers are burnt.



II.3.2 Samples should be sent to the laboratory immediately and information provided

These samples must be collected and a special messenger should submit to NERDDL within 24 hours after the DVO/Forest officer and DIO reach the spot. NERDDL will complete all tests at the earliest.

II.4 Immediate report to Director, Animal Husbandry, District Collector and others

The DVO will immediately report Director, Animal Husbandry & Veterinary Department and District Deputy Commissioner as well as to other officers of the Revenue Department like the Sub Divisional Officer, Circle Officers, Block Development Officer etc. The District Administration and Animal Husbandry & Veterinary Department will then proceed to take action with regard to enforcement of restrictions indicated below.

II.5 Identification of alert zone

An area within 10 km radius from the affected place/premise should be identified as the alert zone. All villages and habitations within that area should be identified. The Panchayat authorities, civil and veterinary officials in those areas should be alerted about the possibility of African swine Fever and requested to strictly enforce the restrictions mentioned below.

II.6 Restrictions to be enforced at the site and the alert zone pending receipt of test reports

II.6.1 Restriction in alert zone

Pending receipt of the test results, the entire suspected farm or site should be cordoned off and following restrictions should be immediately brought into effect in the alert zone by the District administration with assistance of the Animal Husbandry & veterinary Department.

- i) No vehicles should be allowed to ply in and out of the affected farm/site. Personal vehicles should be left outside the farm premises.
- ii) No movement of live pig, dead carcass, pig feed, manure, farm machinery, equipment or any such material should be allowed both within the alert zone and to outside the zone.
- iii) The farm personnel should never move out of the farm with farm in-house clothing. While leaving the farm premises, farm personnel should clean themselves thoroughly with suitable disinfectants.
- iv) Movement of people to and from the suspected farm should be restricted to the barest minimum. No other animals should be allowed in the farm.
- v) Inter-sectional movements of farm personnel should be banned. They should not visit any other pig farm/establishment etc.
- vi) Disinfection procedures should be strictly applied at the entrance of the premises.
- vii) All records of pigs present at the farm are to be maintained properly.
- viii) Before the test results are received, the live pig market, and pork meat shops in the area are to be closed by the District Deputy Commissioner/Sub-divisional Officer in consultation with the Animal Husbandry & Veterinary Department, particularly if more farms/ premise become suspect during this period.

II.6.2 Information to pig farmers/rearers

The pig farmer (farmers) at the suspected site should be informed of the restrictions and personal biosecurity measures and should be requested to comply with the same strictly. While these restrictions should be enforced strictly, it should be ensured that this does not create any scare; for this purpose the help of Revenue, Panchayat, Municipal authorities and also the media should be sought.

II.6.3 Collect information pending receipt of results

Pending receipt of the test results, the DVO should arrange to record mortality or sickness of pigs at the suspected site and the alert zone. During this period, he should also arrange to collect



information about the total pig population (with details of age/weight) and population with individual pig farmers (both backyard and commercial) separately within a radius of 1 km and between 1-10 kms from suspected site.

II.6.4 Action if laboratory diagnosis is negative for African Swine Fever (ASF)

The restrictions mentioned above should, of course, be abolished if the laboratory diagnosis proves to be negative for ASF.

II.6.5 Action by Forest Department in bird sanctuaries etc.

In case the suspected site happens to be designate forest, the actions to be undertaken by the Forest Department should be as decided with due consultation of Animal Husbandry & Veterinary Department.

II.7 Naming a Veterinary Officer as the designated officer

Before leaving the place, the DVO shall nominate a fairly senior and knowledgeable Veterinary Officer of the Department serving in the area as the designated officer for co-ordination and other necessary actions.

III. Action Plan in case outbreak of ASF is confirmed

III.1 Notification & Information of outbreak

III.1.1 Notification of Outbreak by DADF, Government of India

In case laboratory tests confirm the occurrence of Notifiable African Swine Fever at NERDDL, the same will be communicated to the Government of India i.e. DAHD, who in turn may declare an outbreak of African Swine Fever in the area. The Control and containment operations will be initiated immediately after notification to this effect.

III.1.2 Reporting of the outbreak

The Principal Secretary/ Commissioner & Secretary/ Secretary, Animal Husbandry & Veterinary Department under the provision of Clause 6 of *The Prevention and Control of Infectious and Contagious Disease in Animals Act, 2009* shall notify the outbreak of African swine Fever in the State.

III.1.3 Notification to forest authorities

In view of the threat of spread of the disease to the wild pig population the State Animal Husbandry & Veterinary Department will also notify to the State Forest authorities at its level. This may be done at the level of the Director/Secretary, Animal Husbandry & Veterinary Department at appropriate levels.

III.1.3.1 Declaration of infected, surveillance and buffer zone

Immediately after declaration of epicentres of infection an area covering 1 km radius from the foci of infection will be declared as Infected Zone (IZ).

The villages falling under 10 km radius (9 Km from the periphery of infected zone) from the foci of epicentre will constitute the Intermediate / Surveillance Zone (SZ) and the villages beyond the surveillance zone will constitute the Disease Free Zone /Non-Infected Area (FZ).

1. Infected zone (IZ) – 1 Km radius of infected premises (IP)
2. Intermediate / Surveillance zone (SZ) – 10 Km radius from the infected premises (9 km outside the IZ)
3. Disease Free zone /Non-Infected area (FZ) - Area outside the SZ





supervising & undertaking clean-up & dis-infection etc. Since manpower requirement to conduct operations can be large especially in case of multiple outbreaks it is advised that all the veterinary and para-veterinary and other related personnel of the Animal Husbandry & Veterinary Department are trained in the control and containment of ASF. Simultaneously capability should be developed for supervisory operations to enable veterinarians to assume leadership in an outbreak.

III.3.3.1 Issues as part of preparedness

- i) Total number of RRT's required to be set up in the State, which is to be determined on the basis of the pig population, its size, concentration and type.
- ii) The composition of the RRTs may vary as per the task to be performed. For example, the RRTs for pre culling data collection/transport of pigs to culling site/culling will comprise largely of veterinarians and paravets assisted by Class IV staff etc. The RRTs for clean-up and disinfection will function under the overall supervision of veterinarians/paravets and comprise of Class IV employees, labour, etc.
- iii) Ideally, the team of cullers must be so decided that the work can be completed within the shortest possible time.
- iv) Manpower has to be mobilized to ensure that control operations are started immediately after notification of ASF. Therefore, time required to mobilize RRT's to outbreak areas is an important element of planning.
- v) A detailed Plan on actual deployment of RRT's to begin and conduct operations should be developed immediately to ensure that tasks of culling, clean-up, dis-infection etc. are conducted in a co-ordinated and organized manner.
- vi) Man power may also have to be mobilized from other districts in certain situations as per requirement. The Director of Animal Husbandry & Veterinary Department will be responsible for such mobilization which should be so coordinated that RRTs do not reach later than the day specified for reporting or too early resulting in wasteful expenditure on their boarding & lodging.
- vii) Attention also must be paid to availability of infrastructure so that it is possible to organize boarding & lodging for RRT's in the event of inadequacy is felt for RRTs in the district and additional manpower (Vets/Para-vets) need to be mobilized from adjacent districts.

III.3.3.2 Types of RRTs

- i) The pig collecting RRTs comprising of one VO, one VFA and three labourer
- ii) Transport RRT comprising of one VFA and two labourer
- iii) The stunning RRTs comprising of 1 VO, three VFA and labourer
- iv) The surveillance RRTs comprising of one VO, two VFAs, two gopal mitras or allied workers
- v) RRT for data collection comprising of One VO, 2 VFA , 1 Gr IV and one representative from the revenue department. This RRT will collect data on owner details and category wise Pigs to be culled and submit the information of a particular epicenter to District Office.

III.3.3.3 Role and responsibilities of pig collecting RRTs

- i) There will be one pig collecting RRT for a block of 5 villages.
- ii) These RRTs will take the list of farms/ households of the villages collected by the RRT of data collection from which pigs are to be collected.
- iii) Upon arrival in the village they will move to the households/ farms to collect the pigs and hand over the pigs for loading in the truck. If necessary they will render assistance to the transport RRT in the loading process.
- iv) During collection they will take note of the details as indicated in the section "Culling of pigs in infected Zone" and submit the same to the competent authority for payment of compensation.
- v) After collection and loading the pigs in the trucks they will carry on the disinfection process in the farms/ households with the help of farm workers/ pig owners as per bio security norms described under Steps to be taken in depopulated farm households.
- vi) After loading of one consignment of pigs in the truck the collecting RRT will also hand over the records of the pigs and owners to the transport RRT.
- vii) After completion of days work the collecting RRTs will move to the burial site for destroying their used PPE kits by burning.
- viii) On the way back they will have to carry out the task of spraying disinfectants in the road by



III.1.3.2 Imposition of Restrictions in the containment zones

- i) Ban on movement of pig and pig products originating from infected and surveillance zones
- ii) Ban on sale of pig and pig products originating from infected and surveillance zones
- iii) Ban on practice of swill feeding all over the state
- iv) Ban on disposal of carcass in open field or in water bodies/ rivers (only burial is allowed)
- v) Restriction on movement of vehicles (outward) without sensitization from or through the infected zones until culling and sanitization operation is complete
- vi) Restriction on movement of people (outward) without sensitization of their hands, legs, shoes etc.
- vii) Complete ban on consumption and marketing of pigs in the infected zone till the culling and sanitization operation is completed
- viii) Complete ban on reintroduction of pigs from other areas in the infected zone until restocking is permitted.
- ix) Complete ban on movement of vehicles into or out of farm premises
- x) Ban of keeping pigs in an area covering 1 km around each of the reserve forests of the state till ASF free status is achieved by the state.

III.2 Implementation of all contingency procedures under co- ordination of District Deputy Commissioner

Once the occurrence of ASF in a particular area is notified by the Government, all contingency procedures for the containment and eradication should be implemented at once. Many immediate steps will have to be taken as indicated in the succeeding paragraphs in addition to continuing and intensifying all the restrictions mentioned in para II.6.1. The responsibility for this purpose shall vest with the District administration under the overall control of the District Deputy Commissioner with the technical assistance of the Animal Husbandry & Veterinary, Forest etc. as per situation. The DVO actively assisted by the Piggery Sector officer of that particular district, will, undertake the complete supervision for operations on the animal health side. In case the infected area happens to be a designate forest etc. the steps should be taken by the State Forest Department. There will, however, be no need to provide any compensation as mentioned in paras III.13 in respect of the wild pigs, if any, in the sanctuary to be destroyed.

III.3 Pre-requisites to launch operations

III.3.1 Control Room

The first pre-requisite is to set up a 24 hrs Control Room within infected area equipped with telephones with STD facility, fax machines, computers with internet access, secretarial assistance etc. Adequate awareness raising be undertaken amongst the farming community for redressal of any animal husbandry related issues on the **Toll Free Call Center 1962**. The Personnel deployed in the Control Room/Call Center should have the articulation and capacity to disseminate comprehensive information. It is likely that the Control Room/ Call Center may be contacted as source of information by several agencies including the Government. Conduct of operations has shown that the Control Room becomes the nerve centre for the entire operation against the disease.

Concerned District A H & Veterinary Officer will be coordinating the entire operation supported by the district Piggery Sector Officer. One District Control Room will be set at the District HQ/epicenter equipped with telephones with STD facility, fax machines, computers with internet access, secretarial assistance etc. One Data entry operator /an in house staff will be engaged to upload the data on farmers and their pig details within the Infected Zone in a software developed for DBT.

III.3.2 Other Pre-requisites to launch operations

Other pre-requisites to launch the operation are Rapid Response Teams (RRT), Personnel Protective Equipment (PPE) and stockpile of sanitization materials for dis-infection.

III.3.3 Rapid Response Teams (RRTs)

The Animal Husbandry RRTs will be responsible for operations like culling, disposal,



which they travel back.

- ix) The collecting RRTs must complete their assigned task of depopulation within 5 days covering all 5 allotted villages.

III.3.3.4 Role and Responsibilities of Transport RRTs

- i) Transport RRTs will comprise of three members (one VFA and two labourer)
- ii) They will load the pigs in the truck with the help of pig collecting RRTs
- iii) They will take the record of the pigs and owner detail with them after completion of loading. The records are to be handed over to the Stunning and burial RRTs at the designated place of unloading during the unloading process.
- iv) They will unload the pigs in the unloading area.
- v) They will ensure that no animal waste is spilled over in the roads during the process of transport. If there is some accidental spillage, they will immediately disinfect the same in the spillage place. If possible tarpaulin sheet may be placed in the loading area for prevention of spillage of wastes.
- vi) After completion of day's work they will clean and disinfect the vehicle including the tyres and adjacent areas of the tyres.
- vii) They will burn their PPE kits at the burials site after completion of the day's work and disinfect their gum boots.
- viii) They will also provide PPE kits and gum boots to the driver and the helper of the truck which are also to be burnt after completion of the day work and gum boots disinfected for reuse.

III.3.3.5 Role and responsibilities of pig stunning and burial RRTs

- i) The Stunning and burial RRT will comprise of 13 members (1 VO, 3 VFAs and 9 labours).
- ii) They will receive the pigs along with the records from the transport RRTs
- iii) The stunning and burial RRTs will stun the pigs one by one and bury the pigs immediately after stunning.
- iv) They will assess the number of burial pits needed for entire 5 days period with size of the pits.
- v) They will supervise the digging of the pits so that they are of proper dimensions
- vi) They will examine the strength of the temporary bamboo fences in the pig holding; unload area as well of the stunning cage.
- vii) They will supervise the unloading process and bringing the pigs to the hold area.
- viii) They will complete the cleaning of disinfection process of the hold, unload and stunning areas after completion of the days work.
- ix) They will supervise the disinfection process of the transport vehicle
- x) They will keep record of the collection RRTs and Transport RRTs of their jurisdiction and ensure that all the PPE kits are burnt at the burial site and all the gum boots are disinfected prior to moving out of the burial site.

III.3.3.6 Role and responsibilities of Surveillance RRTs

- i) A surveillance RRT will comprise of 5 members (one VO and four VFA/ Gopal Mitra or allied animal health worker)
- ii) One surveillance RRT will cover a block of 10 villages in the surveillance zone and pay door to door visit as frequently as possible (not less than 3 times in one village) during a period of 3 months from the date of start of culling operation.
- iii) They will record any mortality or abortion cases in the surveillance zone and report to competent authority.
- iv) They will collect samples from any mortality and also collect representative sera samples as will be directed from the NERDDL from time.
- v) They will submit the collected samples to nearest veterinary laboratory for onward transmission to NERDDL.
- vi) Any abnormal mortality will have to reported with requisite information (village name, village co-ordinates, block, district, total population, susceptible population, number affected, number died)
- vii) They will liaise with local leaders, gaon burhas, PR institutions for prompt receipt of reports and for creating awareness regarding the pig disease
- viii) They will submit weekly report to NERDDL as per format to be provided by NERDDL



III.3.3.7 Role and responsibilities of Data collection RRTs

- i) The RRT will perform the Data Capture at Farmers level in the prescribed format developed by the IT vendor as per requirement of the software for facilitating claim disbursement through DBT .
- ii) Data includes Farmers ID details, Bank details and category wise animal details.
- iii) This RRT will also undertake the Identification of the animals listed in the data entry format, by stamping or by any other suitable means.
- iv) The RRT will submit the collected data sheets of their epicenter to the Data entry operator at the concerned District Head quarter.
- v) They will also inform the farmer the tentative culling date for their area.

III.4.1 Personal Protective Equipment (PPE)

PPE is very important in conduct of operations as it provides personal biosecurity to the members of the Rapid Response Teams. PPE is to be used by RRT's of the Departments of Animal Husbandry, Public Health and all persons having direct & active exposure to infected pigs. Workers/ labor force will also have to be engaged at some stages of the operation especially for clean-up and dis-infection. They are also to be provided with PPE. It has to be ensured that persons are allowed to take up control and containment only after being provided with PPE and operations should not be allowed to be started without use of PPE. Large quantities of PPE's have to be used in operations and the Animal Husbandry & Veterinary Department are required to ensure the following:

- i) Availability of sufficient stock of PPE prior to start of operations and during operations.
- ii) Tie-up for regular supplies during operations
- iii) PPE is a single use-item and has to be changed every time a person moves from one infected premise to another.
- iv) Prior to start of operations, briefing must be given on importance of kit, its use/ disposal etc.
- v) Kit has to be disposed off by burning or on the carcass disposal pits on exiting a farm premises.

III.4.2 Recommended sequence for wearing and removing PPE

The sequence for wearing the PPE is as under:

- i) Wear shoe cover and wear the gum boots
- ii) Wear 'Dangri' and inner gloves
- iii) Fix hood over head
- iv) Put on gloves

The sequence of removing PPE should be followed as below

- i) Remove gum boots and shoe covers
- ii) Remove house gloves
- iii) Wash hands
- iv) Remove 'Dangri' with attached hood
- v) Remove the inner gloves
- vi) Discard all
- vii) Wash hands with appropriate disinfectant

III.4.3 Safety of Personnel engaged in control operations

From the biosecurity point of view in respect of African Swine Fever virus, it is pointed out that the health of farm hands, attending veterinary officer, and other staff engaged in culling and disinfection of an infected premises should be under strict observation. Manpower requirements to conduct ASF operations are very large. Further man-power is required for various stages of control operations viz. culling, cleanup, disinfection etc. Persons engaged in control operations have chances of disseminating infection though in varying degrees depending upon the nature of the task performed by them. It is, therefore, of utmost importance to ensure the strict maintenance of



biosecurity of such personnel. Cullers and transporters should disinfect their hands after the operation. Environmental clean-up should be carried out in areas of culling using the same protective measures as above.

III.4.4 Imposition of legislative measures

All the existing legislative powers associated with notification and all provision under the Act are exercised by the Animal Husbandry & Veterinary Department and the District Administrations.

III.5 Demarcation of Surveillance & Infected areas & actions to be taken in these areas

III.5.1 Declaration of Infected and Surveillance areas

An area of 1 kms radius around the infected site which should have been clearly identified as per para II.5 with names of all villages and habitations within that area shall be notified as the Infected Area. Information about declaration of the area with 1 km radius from the infected site as infected with African Swine fever should be clearly and prominently displayed in the local language preferably through sign- boards. The area between the radius of 1 kms and 10 kms around the infected site should be notified as Surveillance Zone. The Surveillance Zone should act as a buffer between infected area and disease-free area.

III.5.2 Immediate tasks to be carried out by the Veterinary Officer on confirmation of outbreak

Access to the premises by the veterinarians must take place with PPE. A changing room must be identified, and it should contain large plastic bags, cardboard boxes and a sufficient quantity of disinfecting solution. The immediate tasks to be carried out by the designated Veterinary Officer will be to:

- i) Quickly assess the state and condition of the farm/ premises to determine the nature and scope of operations to be conducted.
- ii) Identify locations on the farm where vehicles leaving the farm can be properly washed and disinfected.
- iii) Activate the disinfection procedures at the point of entrance to/exit from the infected premises; identify sites where staff may wash and disinfect; and ensure that on leaving the premises, all staff, wash and disinfect exposed body parts and shoes and agree to wash their clothing as soon as they return home and the disposable gear is disposed off by burning/ disposed off in the carcass disposal pits.
- iv) Ensure that vehicles are washed and disinfected internally and externally, and vehicles should be allowed to leave the infected premises only if it is absolutely necessary.
- v) Take necessary steps to ensure that contamination of water reservoirs is avoided.

III.5.3 Absolute ban on movement of pigs

Movement of pigs i.e. live pigs should be completely banned from and to the infected area. Restocking of pig in that area will commence not before three months after issue of Sanitization Certificate as per Para III.11. Effective measures and monitoring shall be undertaken to ensure that such restriction on movement of pigs is made effective. Local bodies, and representatives should be involved in enforcing such restrictions and public informed through various means of communication of the necessity of doing so.

III.5.4 Closure of pig and pork markets and shops

All pig products and pork markets/shops within the radius of 10 kms from the infected site should be immediately got closed forthwith by the District administration with the assistance of the Revenue and Municipal /Panchayat authorities and shall remain closed till 30 days after completion of the culling and cleaning disinfection operation of the infected zone. After 30 days the marketing of pork may be allowed within the surveillance and infected zone provided no fresh cases are detected within the surveillance zone. It is also to be noted that till declaration of disease free status by the competent authority:



- i) No pig or pig products will be allowed to be taken out or sold out from the surveillance zone to buffer zone or disease free zone.
- ii) No live pigs or pig products will be allowed to be introduced into the infected and surveillance zone from outside.
- iii) Sale or transport of live pigs or piglets will remain suspended within the surveillance and infected zone until further orders.

III.5.5 Ban on movement of farm personnel

Farm personnel in the 10 km zone should not be allowed to visit any other pig farm/ premise.

III.5.6 Restrict access to wild and stray pigs

All possible steps should be taken to ensure that wild and stray pigs/ scavenging animals (dogs/ foxes etc.) do not have access to the pig, pig sty and water supplies in the infected area.

III.6 Access to the infected premises

III.6.1 Restriction of movement of persons & vehicles

The number of vehicles and staff in the infected premises should be reduced to the minimum necessary to handle the outbreak as both human beings & vehicles can be instrumental in further spread of infection.

III.6.2 Restriction on movement of persons & equipment

The movement of people and equipment from the infected premises should be restricted only to the requirements related to handling the disease. Proper disinfection procedures must be adopted even for this. Any staff that has access to the infected premises may only leave the farm after a complete change in clothing and disinfection of clothing.

III.6.3 Restriction on movement of vehicles

The vehicles of the veterinarians and others visiting the infected premises must be left outside the premises at a distance of at least 500 meters from the entrance of the farm. If it is necessary for vehicles such as JCB's to enter the farm premises for control and containment operations, such vehicles will be fully disinfected before leaving the farm/ infected premises. They will be disinfected by washing them thoroughly and thereafter using disinfectants.

III.7 Destruction of pigs etc.

III.7.1 Eliminate diseased & in-contact pigs

The entire stock of diseased and in-contact pigs on the infected premises needs to be eliminated and destroyed. The means of destroying the herd are given in succeeding paras.

III.7.2 Destruction of pigs in the infected zone of 1 km radius (or as may have been prescribed) outside the initially infected farm

For effective control of the disease it will be necessary to stamp out all the pigs within the infected zone even though the pigs outside the initially infected farm may not be currently showing any symptoms of the disease. All such pigs should also be destroyed. In case of culling, the actual culling should be started from centre towards periphery.

III.7.3 Destruction in presence of designated officers

The destruction of pigs should take place in the presence of the designated Veterinary Officer and concerned local authorities such as officials of the Revenue Department, Municipality, Panchayat etc. as may be determined. The presence of designated officers or any other appropriate authority for overseeing the culling and disposal of dead pigs is necessary from the point of view of determining



- a. For 100 adult pigs, the area needed is 2 mts X 5 mts X 6 mts (depthXlengthXbreadth)
 - b. Pig burial pit will be adjusted according to the number of pigs to be culled in the area
3. If the water table is too high preventing deep burial, than over ground burial will have to be made following the procedure as detailed in the description part for burial.
 4. 3 stunning cages (1 X 0.5 X 0.5 cu mts, each)
 5. A bamboo fenced unloading area (4 mts X 4 mts)

III.7.4.4 Methods of Stunning

III.7.4.4.1 Electrical stunning

Simple and easy for electric stunning of pigs with the single application of sufficient electrical current to the head behind the ears, to simultaneously stun the animal and fibrillate the heart. Provided sufficient current is applied, the animal will not recover consciousness.

- Pig is to be restrained in the mobile heavy iron trap.
- The scissor-tongs connected to mobile Voltage transformer with 8 stage step-up & down facility (150 ~ 450 volts) and two variable jerk time selector of 10 & 20 seconds
- All RRT members for Culling will mandatorily use thick rubber gloves and gum boots.
- Prerequisite: One mobile generator van at the disposal site/pit for continuous supply of electricity (for details refer Annexure-IV)

Advantages

- This method stuns and kills simultaneously.
- It minimizes post-stun convulsions and therefore is particularly effective with pigs.
- A single team member only is required for the application.
- Non-invasive technique minimizes bio security risk.

III.8 Disposal

It has to be ensured that the dead pigs, feed and other materials are not moved out of the infected site under any circumstances but are disposed off as explained in succeeding paras.

III.8.1 Disposal of dead pigs

The pigs killed in operations can be disposed off by burning in pyre or burial. Appropriate quantity of wood would be required for burning. It should be ensured that carcasses are completely burnt as the predication site of the virus is the bone marrow. The other alternative is to dispose off pigs is by burial. For this, a pit must be prepared as soon as the diagnosis is confirmed. The size of the pit must be determined taking into account the nos. and size of pigs.

It must be ensured that the pits are sufficiently deep. JCB machines may be deployed to dig pits. Burial should be such that the disposed material is kept well below the ground level to ensure that rodents or stray animals cannot access it. The carcasses must be covered with a layer of appropriate disinfectant, and then with a layer of earth (at least 40 cm deep) thus alternating one with the other till the pit is covered up to the ground level. The burial ground is to be suitably marked and should not be opened for at least five to ten years. The ground must be watched for settlement, if any and periodically filled with earth and lime if it shows signs of sinking over time. Wherever possible the carcasses may be burnt/ incinerated. A certificate of disposal of pigs must be obtained from the verifying authority under Para III.7.3 above.

III.8.1.1 Deep Burial

1. The pit should be dug with requisite dimension with the help of JCB (where available). The JCB may be hired with the help of civil administration or with the help of PWD. Where JCB is not available, wage labours will have to be engaged in digging of burial pits.
2. Immediately after stunning, the pig is to be dropped into the burial pit.
3. After burial of the requisite numbers of pigs in the pit, bleaching powder should be sprinkled



the compensation to be paid to the affected piggy farmers.

III.7.4 Depopulation

All pigs infected pigs and in-contact pigs will compulsorily be culled in the infected zone. Culled animals will be taken to a designated place within the infected zone for stunning and burial. The designated place will have a burial pit where stunned animals will be buried. The designated place will have to be prepared in advance for holding transported pigs, stunning and burial.

The district veterinary authority will prepare a list of villages (where pig mortality in unusual pattern is taking place) which may prove to be affected areas in future. The villages near rivers where pig carcasses are found to be floating are also to be treated in similar manner.

In infected zone the farms as well as backyard pigs which had shown symptoms of disease or have mortality record are to be identified with names of owners. Side by side in contact animals are to be identified with names of owners.

All the animals of the infected zone having history or suspicion of exposure and the pigs of the households which had a record of mortality/ disease will be culled.

Culled animals will be taken to a designated place by mini truck where they will be stunned and buried. The details of pigs (sex, age, approximate live weight, breed and compensation value of the pigs) will have to be recorded before loading into the truck for validation with the already captured data by Data Collection RRT and uploaded in the system. The Name, address, mobile no, bank account no. with IFSC code of farmer will also have to be recorded by Data collection RRT beforehand for disbursement of Compensation through DBT to the owner.

III.7.4.1 Method of loading and unloading truck

Make a temporary bamboo plain ladder which can be attached to the vehicle (loading area) from the ground. The piglets can be directly loaded in the truck. The adult pigs will be restrained by a rope tied to the snout and pulled up along the ladder by a labour with the help of another labour pushing the pigs from behind to load in to the truck. A minimum of 10 adult pigs and 20 piglets can be loaded in a truck. The truck will then move to the stunning and burial area and unload the pigs. The stunning and burial area must be located within the infected zone. After completion of truck trips the truck will have to be cleaned and disinfected (inclusive of tyres and areas adjacent to tyres) in the burial area. The road by which the truck travelled will also have to be disinfected. It is to be ensured that the stunning/culling and burial site should be kept away from public and media attention as the scene at the site will require viewers discretion, as it may be unsuitable for public viewing.

III.7.4.2. Steps to be taken in depopulated farm households

Cleaning and disinfection of the areas where animals are kept is to be done thoroughly. Disinfection of the entire household and the roads leading to the households is also mandatory. Dipping of work cloths /shoes of the farm workers in the disinfectant solution is also necessary. Any type of vehicle in the household is also to be disinfected. Application of slaked lime in the farms/ pig rearing areas with slaked lime is to be done after disinfection with virucidal disinfectants.

III.7.4.3 Action plan for the areas where culled animals will be stunned and buried

The stunning and burial area must be located within the infected zone. The burial area should preferably be a high land and accessible to transportation of animals. If such a location is not available within the infected zone, than an adjacent place to the infected zone may be selected. Provision of electricity connection is to be made where electrical stunning will be practiced.. If an adjacent place is selected, than the road leading to the place is to be closed during the culling operation and can only be opened after disinfection of the roads. The stunning and burial site should be covered with agro-nets or similar barriers so that it will not directly be visible to outsiders and no outsiders will be permitted to enter the area. No media briefing or video-graphy is allowed within the site without proper permission from competent authority.

The burial area will have:

1. A bamboo fenced pig holding area (20 mts X 20 mts) for pigs.
2. Burial pits



above the carcasses. If the farm have a stock of feed, than these are also to be buried. There should be at least 1/2 inch of bleaching powder above the carcasses. Than the pits are to be filled with soil. Above the soil, a layer of slaked lime is to be sprinkled adequately.

4. The burial site is to be kept in a bamboo enclosure and should not be opened for a period of 6 months, a sign board in this regard is to be displayed near the burial pits.

III.8.1.2 Over ground burial

In case the water table is too high and pits cannot be dug without touching the ground water level, than over ground burial method can be used.

III.8.1.2.1 Method

- i) Dig a trench of desired length X breadth in the soil so that it is about 50 cm above the ground water table
- ii) The length and breadth will depend upon number of carcasses to be buried.
- iii) Put a 30 cm layer of paddy straw, wood chips or alike material (bio degradable organic waste material) in the trench
- iv) Place carcasses one after another above the layer of paddy straw bedding without dumping one above another.
- v) Treat the carcasses with liberal amount of disinfectants (bleaching powder, sodium hydroxide solution etc)
- vi) Cover the carcasses with soil (Soil cover should be at least 1 meter above and around the carcasses)
- vii) Dig surface water diversion trench around the burial place
- viii) Erect temporary fences around the burial area (Note: the temporary fence must be in place for at least 9 months) to prevent soil erosion as well as to prevent access of unwanted scavenging animals.



III.8.1.2.2 Bio-security of the and holding and burial area

- i) All persons involved with culling (including the driver and helper of the transport truck/ labours) must wear PPE kits and gum boots.
- ii) All the persons will come to the burial site after completion of the day's work and after disinfection of the burial site and the transport truck, they will remove their PPE kits and dump in a place and burn them.
- iii) While their way back to the burial site they will spray disinfectants along the road.
- iv) The gum boots are to be cleaned and disinfected for further use.
- v) The persons than will move to the unloading area and dip their shoes/ gumboots again in makeshift feet dip containing disinfectants and only after that exercise they will be allowed to move out.

III.8.2 Destruction of infected materials

Infected material will include all the pig products including meat, and waste materials, like manure and other infected materials like feed, feed ingredients, manure, drugs and vaccines available on the infected farm premises. Such material must not be allowed to move out of the infected premises at all and are also to be destroyed at once including any material left over from the period before the disease was reported. For destruction of the infected materials, the following procedures should be adopted:

- i) Waste, organic and all other non-disinfectable material present on the farm must be



- destroyed. In particular, destruction of pork, pork products, animal feed/feed materials, must be ensured by deep burial or burning. Straw may be more conveniently burnt.
- ii) The crops grown in the farm should be uprooted and buried/ burnt.
 - iii) Animal feed/feed materials present on site must be burnt and buried.
 - iv) The protective clothing used by the staff engaged in destruction of the pigs should also be burnt.
 - v) Water should not be allowed to accumulate in the farm premises and particularly in and around disposal sites.
 - vi) Other measures to dispose off any other material on infected premises may be taken in a manner that ensures the infected material is not taken out of the infected premises and is safely disposed off.

III.9 Clean up and disinfection

Clean up & disinfection is the last stage of control & containment. The infected premises are to be dis-infected after pigs and infected material have been destroyed and disposed off. Different protocols may be considered for clean-up and dis-infection of commercial and backyard pig farms as explained in succeeding paras.

III.9.1 Cleaning and disinfection of the farm premises and farm implements (Commercial Pig farms)

The following procedure may be adopted for cleaning and disinfection of the premises and farm implements:

- i) Washing and disinfection of walls, floors and ceilings of the infected establishments must be performed aiming at the removal of all organic material. All sheds in the premises should be cleaned which includes washing of floors & walls with (Neogen® Viroxide Super™), 3% calcium hydroxide solution; white-washing of concrete areas with lime; spraying the areas with 4% formalin; fumigation of closed chambers and formalin; treating all equipments with 2% sodium hypochlorite solution for 48 hrs etc.
- ii) All units which are physically or functionally connected to the establishment (i.e. creep area, growing pen, sty) must be properly disinfected. Vehicles, used for transporting live animals and animal feed must also be disinfected.
- iii) All equipment inside the house such as drinkers and feed pen must be washed and treated with a disinfectant for at least 48 hours.
- iv) Water reservoirs must also be emptied, washed and disinfected.
- v) Feed tanks (silos) need to be emptied, washed with a hot water-pressure pump and subsequently fumigated.

III.9.2 List of active disinfectants

A list of disinfectants which are active against African swine fever virus, their concentration and recommended use are mentioned below :

- i) Rectified spirit can be used for cleaning of hands, feet of farm workers and visiting officials.
- ii) 2% solution of NaOH should be used at the entrance on foot mats to clean the shoes. This solution can also be used to scrub and clean gumboots and other items.
- iii) Sodium hypochlorite : 2% active chlorine solution (disinfection of equipment)
- iv) Quaternary ammonium salts: 4% solution (treatment of walls, floors, ceilings and equipment).
- v) Calcium Hydroxide: 3% solution (treatment of walls and floors).
- vi) Cresolic acid 2.2% solution: (treatment of floors).
- vii) Synthetic phenols 2% solution: (treatment of floors).
- viii) Vircon-S®, Neogen® Viroxide Super™.
- ix) Formalin and potassium permanganate for fumigation.



Recommended disinfectants and concentrations for inactivation of viruses

Disinfectant group	Form	Strength		Contact time	Applications
		Usual dilution	Final Concentration		
Soaps and detergents	Solids or liquids	As appropriate		10 min	Thorough cleaning an integral part of effective decontamination.
Oxidizing agents					
Sodium hypochlorite NaOCl	Conc. liquid (10–12% available chlorine)	1:05	2–3% available chlorine	10–30 min	Effective for most applications except when in the presence of organic material.
Calcium hypochlorite Ca(OCl) ₂	Solid	30 g/litre		10–30 min	
Vikron®	Powder	20 g/litre	2–3% available chlorine	10 min	Excellent disinfectant active against all virus families.
Alkalis					
Sodium hydroxide	Pellets	20 g/litre	2% (w/v)	10 min	Do not use in the presence of aluminium and derived alloys.
anhydrous (Na ₂ CO ₃)	Powder	40 g/litre	4% (w/v)	10 min	Recommended for use in the presence of high concentrations of organic material.
washing soda (Na ₂ CO ₃)	Crystals	100 g/litre	10% (w/v)	30 min	
Aldehydes					
Glutaraldehyde	Conc. solution	as appropriate	2% (w/v)	10–30 min	Excellent disinfectant active against all virus families.
Formalin	40% formaldehyde	1:12	8%(w/v)	10–30 min	Disinfectant; releases irritating, toxic gas.
Formaldehyde gas	Special generation required			15–24 hr	Toxic gas, recommended only if other methods of decontamination cannot be used.

III.10 Sealing of the premises and issue of sanitization certificate

After the culling and disinfection process has been completed, the premises are to be sealed by competent Veterinary Officer/ Government agency. A Sanitization Certificate is to be issued by the Director, Animal and Veterinary Department stating that culling has been carried out and the area has been cleaned & dis-infected and operations have been concluded. Thereafter, Post-operation surveillance is to be initiated.

III.11 Post operation Surveillance and freedom from disease

III.11.1 Post operation protocol includes actions to be taken after completion of control operations

This will be the most difficult part of the control programme, as it will have a direct impact on the piggery industry and rural livelihood. Once the disease has been encountered in a geographical region, it will bring along with it associated trade restrictions. In order to resume normal trade practices, it is essential that freedom from the disease be achieved at the earliest. Therefore, a series of strategic actions have to be taken up after control operations comprising of culling of animals followed by clean up and dis-infection. The actions to be taken after containment operations have been completed the Post- Operation Protocol (POP) is initiated which includes post operation surveillance, fumigation and spraying, maintaining vigil, and generating social awareness. The POP will be operational for a period of 6 months from date of issue of sanitization certificate.



III.11.1.1 Implementation and Operationalization of the Post Operation Surveillance Plan

The Post Operation Surveillance Plan (POSP), will be put into place after control and containment operations are completed and the area has been completely sanitized and a Sanitization Certificate has been issued. It will comprise of action in two zones:

- The first zone is the infected/ operational area over which culling was carried out. Surveillance in this zone will be physical in nature directed towards verifying that no pigs have been inducted into the area or are allowed into the area for the specified time period.
- It will be necessary to undertake intensive physical surveillance within the infected / operational area. Teams will be required to be set up for such surveillance with defined area of supervision. The periodicity of inspection by such teams can be prescribed to ensure constant vigil. The teams should report back at weekly intervals certifying that no pig was found in the area or if pig was found it has been culled. No compensation will be paid for such culling.
- The second zone is the area beyond the infected/ operational area i.e. the Surveillance Zone. Surveillance in this zone will involve collecting samples from pig both commercial and backyard. Apart from the designated surveillance RRT, the Veterinary Officer and Veterinary Field Assistants of the adjacent veterinary institutions will carry out the post operative surveillance in the surveillance and buffer zones
- Sample frame of surveillance zone
 - The DVO will divide the surveillance and buffer zone into four parts so that each of the four directions (East, West, North and South) are covered and allocate villages among the departmental officials as mentioned in previous paragraph.
 - Each of the villages thus allocated will have to be visited by the designated officials at least twice in a month during the post operative surveillance period of 6 months.
 - In each village they will enquire about any pig diseases including cases of abortion and pig mortality. If any such cases are found than they will have to collect blood samples from in contact animals and in case of mortality they will collect post mortem samples and send to laboratory for testing.
 - It is also mandatory to send the epidemiological form if any unusual pig death is found during their visits.
 - Records of such visits have to be documented and authenticated by the DVO before submission to the state authority.

III.11.1.2 Fumigation/ spraying of infected farm/ premises

The area over which the pigs were culled will have to be fumigated/ sprayed every 15 days after completion of control operations during POP. Fumigation will be done in closed places and spraying will be done in open/inhabited spaces.

III.11.1.3 Maintain Vigil

It will be necessary to maintain constant watch over areas where dead pigs and other materials have been disposed off and buried. This will be necessary for two reasons. Firstly, to decide if further sprinkling/cover of earth/lime etc. is required for purpose of dis- infection and secondly, to take further corrective action to cover these areas with earth or soil if they show signs of sinking/depression as pigs decompose etc.

III.11.1.4 Communication and Social Awareness

It is to be ensured that no pig is introduced into the area for the next 3 months after issue of Sanitization Certificate. This information should be disseminated in all villages/farms explaining the logic for it, as it is necessary to move towards a disease-free status. The local bodies, especially the Village Panchayats will have to be involved actively in physical surveillance. It will also be necessary to carry out sustained awareness programmes for the local people to educate them about the necessity of refraining from re-stocking pig for at least 3 months. However, there will be a tendency on part of local people to bring in pigs into the area clandestinely. This is to be discouraged and prohibited under any circumstances.



III.11.2 Freedom from disease

Disease free status can be declared by the country under intimation to OIE in case no other outbreak takes place or no samples collected during Post Operation Surveillance test positive for the next 6 months after culling of pigs and disinfection / clean-up of all affected establishments.

III. 12 Repopulation of infected premises

III.12.1 For ASF-infected premises where disease is not linked to vectors, restrictions will remain in place until-

- i) More than 3 months has elapsed since the satisfactory completion of secondary Cleaning & Disinfection and the Veterinary Authority is of the opinion that restrictions can be lifted without risk of spread of disease; or
- ii) Following satisfactory completion of secondary Cleaning & Disinfection, the premises has been tested for the presence of any remaining disease using sentinel pigs after an elapsed time of 30 days. If no disease is detected in these sentinel pigs during a follow up period of 6 weeks or 45 days, all the restrictions may be lifted. The process for this is further explained below.

III.12.2 For (ii), District Veterinary Authority will license the sentinel pigs on to the premises after certain period of time (specified under law), at least 30 days for ASF-affected premises has passed since the owner has satisfactorily completed secondary Cleaning & Disinfection.

III.12.3 The number of sentinel pigs to be used will be specified by the VA and will be the minimum sufficient number to detect disease on the premises. This should not increase a maximum of 10 % of the stocking capacity of IP. In this context the term "premises" relates to all parts of the holding specified in the IP restriction notice and will include all parts of the holding potentially exposed to disease.

III.12.4 These sentinel pigs must have tested negative for antibodies against the ASFV or come from premises not subjected to African swine fever restrictions.

III.12.5 District Veterinary Authority will undertake serological laboratory tests of the sentinel pigs 45 days after the arrival of the last sentinel pig onto an ASF-affected premise.

III.12.6 If these final tests prove negative for swine fever antibodies, District Veterinary Authority will lift all restrictions on the premises and the farmers may fully restock their farm/premises.

III.12.7 For holdings where the pigs are kept indoors, the farmer can decide to use a much larger number of sentinel pigs. If a larger number of sentinel pigs are used, all the pigs must arrive within 20 days. The sentinel pigs should have tested negative for antibodies against the disease (at the expense of the owner) or come from premises not subjected to restrictions because of swine fever. These sentinel pigs will be subject to serological testing for African swine fever.

III.13 Compensation to be paid for forced culling

It is obvious that the programme of culling of all affected Pigs will succeed only if a system of adequately compensating the piggery farmers is put in place and activated immediately after the outbreak of ASF is confirmed. It is unrealistic to expect the piggery farmers to cooperate with the culling programme unless they can hope to get fair compensation immediately. It must be realised that any expenditure incurred on this will be more than justified by way of bringing about effective control on the disease. It is, therefore, the clear policy of the Government that pig owners should be compensated for loss of animals etc. In order to ensure that compensation is paid expeditiously and that chances of its misuse are minimized, it will be disbursed via DBT (Direct Benefit Transfer) to the beneficiary account through any valid banking instrument, and District Deputy Commissioner may be responsible for the same. In order to have effective control on the expenditure incurred on payment of compensation, it will be necessary to collect data on the pig population before receipt of test results, as mentioned in para II.6.3. The Government of India share cost of compensation paid for culling of



pigs during operations and destruction of infected feed/ feed materials up to 50% of total cost. The share of expenditure of Government of India is charged to "Assistance to States for Control of Animal Disease (ASCAD)" Scheme. The consideration of the following issues as part of operational preparedness will aid in hassle free operation:

- i) Funds to be available at local level to pay compensation.
- ii) Compensation should be credited immediately after pigs are killed in operations
- iii) System of verifying claims and paying compensation should be decided in advance and notified to field agencies.
- iv) Revised rates for Culling of pig under categories:

Sl. No.	Category of destruction	Carcass weight classification	Compensation rate (Rs.)
A	Animal Carcass		
1	Piglet	Upto 15 Kg	2,200.00
2	Grower/ Finisher/ Adult	15 – 40 Kg	5,800.00
3	Finisher/ Adult/ Breeding Boar/Sow	40 – 70 Kg	8,400.00
4		70 – 100 Kg	12,000.00
5	Adult Breeding Boar/Sow	< 100 Kg	15,000.00
B	Animal Feed		
1	Cost of feed destroyed	-	22.00/ Kg

For ease in calculation of carcass weight at the point of culling, the following formula may be used:

- i) Measure Heart Girth (circumference of the pigs' girth) in meters
- ii) Measure the length of the pig along its back from the base of its ears to the base of the tail in meters
- iii) Square the Heart girth and multiply with length ($L \times G^2$)
- iv) Then multiply by 69.3, the resultant will be live weight of the pig in Kg ($L \times G^2 \times 69.3$)
- v) 72% of the live weight may be taken as Carcass weight in Kg ($L \times G^2 \times 69.3 \times 72/100$).

III.14 Trade and transportation of pigs

Trade and transport of pigs from ASF free zones/ states to disease free zones / states may be allowed observing the following standards.

1. No pigs or pig products originating from or within infected/ surveillance/ buffer zone of ASF will be allowed to be transported until the area is declared free from the disease and until the restocked animals are found to be free from infection by laboratory testing.
2. Live animals from disease free zones or states can only be transported in vehicles observing the prescribed Animal Welfare Norms and "The Transport of Animals Rules, 1978".
3. Each consignment of shipment of animal(s) or animal product(s) must have Health Certificate issued by a competent authority (Not below the rank of a Registered Government Veterinary Officer). The certificate must incorporate the following
 - Identification mark/ number of each individual animals
 - Breed, Age, sex and individual health status of each of the animals
 - Record of vaccination and deworming
 - The transit pigs or their products are originated from ASF free zone.
4. A certificate allowing transportation of the animals issued by the competent authority (not below the rank of District AH & Veterinary Officer) must accompany each shipment from the state/ district of origin indicating
 - Start date of shipment
 - Source and destination point of animals
 - Purpose of transport
 - Number of animals transported



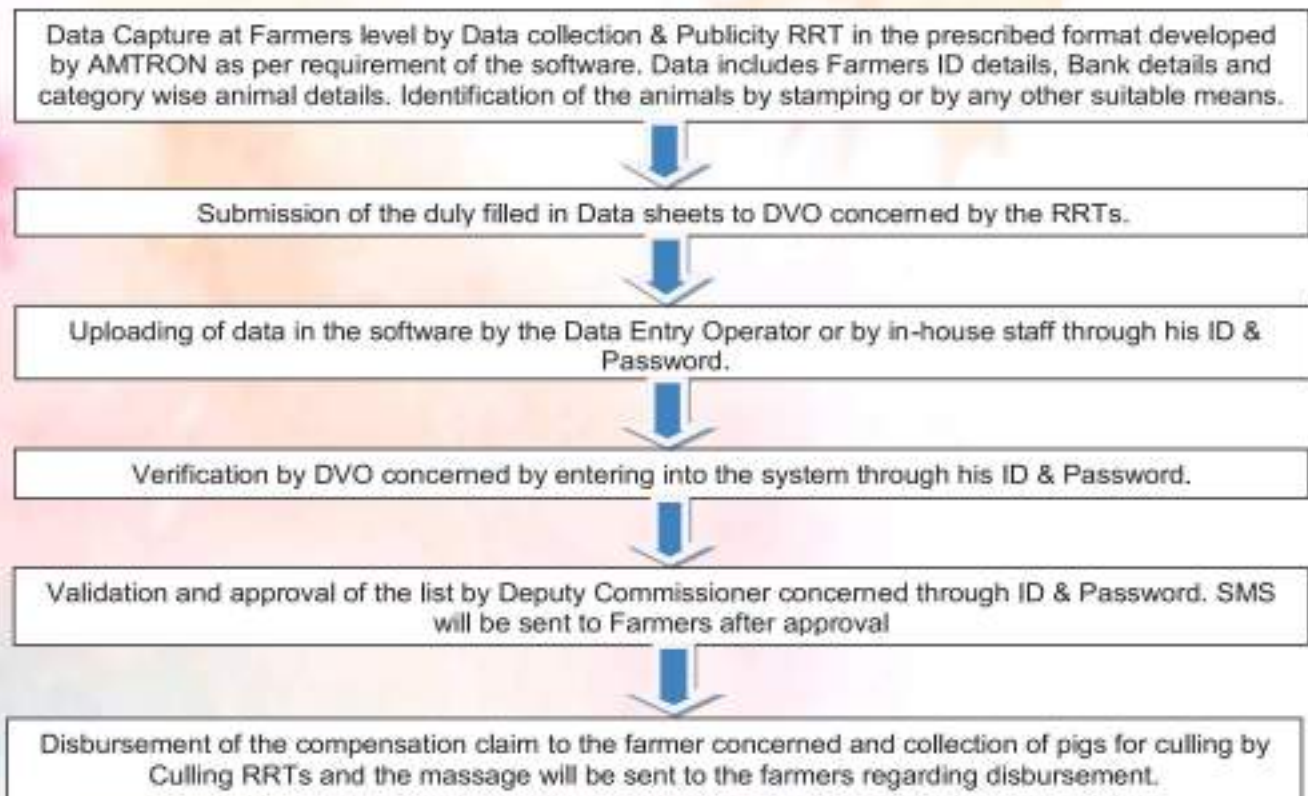
- Details of sender, transporter and recipient
 - Details of issuing authority of health certificate
5. Thorough health check up of each animal to be done by a Government Veterinary Officer at the destination point prior to delivery at designated places/ farms in case of animals transported from other states to Assam. This will also imply in case of inter district movement within Assam.
 6. In case of any animal found to be not fit than these will have to be quarantined and the resultant cost of maintenance of the quarantined animals will have to be borne by the supplier or the transporter or the recipient whichever is applicable.
 7. If the transit animals are to be transported from any state of India to any other states through Assam, than these may be allowed to be transported provided
 - The transit animals are not disembarked in any place for any purpose within Assam
 - The vehicle do not have any stop over points within Assam unless it is of utmost necessity
 - No animal waste or animal carcass is thrown out of the vehicles along the transit route.
 - Transit vehicles travelling through infected areas of ASF are to be disinfected at the entry & exit point of the infected zones and at the exit point of surveillance zone and the disinfection related costs will have to be borne by the transporter or the supplier.

Violation of which may lead to confiscation of the animals with fines as determined by the confiscating authority.

8. Record of each animal, animal transporter with license number & vehicle number, name of consignee, address of consignee is to be kept at each inter-state or inter district check post and is to be forwarded to the Directorate of AH & Veterinary Department.

III.15 The Flow chart of the different activities from data collection to fund transfer is given below-

III.15.1. Compensation Flow Chart





IV. Bio Security Measures, Advice to persons handling ASF infected pig etc.

IV.1 Exchange of information with industry/farmers

Following notification of the disease, the Government at the level of the Secretary and Director, Animal Husbandry & Veterinary Department will take the piggery industry and small pig farm owners into confidence and inform them periodically about the measures that are being taken to control ASF. Mass media should be encouraged to disseminate information about the Government's initiative on ASF. The support of the industry should be sought for implementing the Government's decisions.

IV.2 Media briefing by official spokesperson

In order to avoid spreading panic and distress selling by piggery farmers, clear and precise briefing of the media should be made regularly by a designated official spokesperson of the Department. The notification, instructions to be followed and information in terms of human consumption of pork products should be announced through media. Unauthorized persons should be discouraged from voicing opinion in the media, which is best left to the experts identified by Government.

IV.3 Public awareness

Awareness in the general public about the disease and its consequences should be made through printed and mass media campaigns based on scientific facts and figures. It must be emphasized that proper cooking of pork at more than 70° C temperature for 30 minutes eliminates the virus and it is absolutely safe to consume properly cooked pork meat. It is, of course, necessary to encourage hygienic way of slaughtering, dressing and packing of pork meat. It is important that details of negative results reported by the laboratory in respect of the surveillance samples are periodically furnished to the media. The journalists should also be invited to awareness campaigns to report the things in the right perspective. The pig farmers associations, cooperatives, etc. should be actively involved in this process. The minimum expenditure required for awareness campaigns can be met from the funds provided under the centrally sponsored scheme of "ASCAD" for the time being.

IV.4 Bio-Security Measures

The best way to control ASF is to prevent exposure by imposing strict biosecurity measures. This can be achieved by advising the pig rearers/ owners to adopt following measures in all farms, even though they may not be currently infected.

- i) **Keep distance** - The pigs should be kept in enclosures. Only those who take care of the pigs of the farm should be allowed to go close to the animals. Unnecessary people should be restricted from entering the sty. Inter-mingling of other animals with pig should be avoided.
- ii) **Keep cleanliness** - Cleanliness inside the pen and around the farm is a must. This prevents germs and bacteria from multiplying. The pen should be cleaned and food and water for pig changed daily. The farms/ sty should be dis-infected regularly. The entire farm premises including appliances, feeders, waterers, pens, etc., need to be thoroughly cleaned and disinfected at fortnightly intervals.
- iii) **Don't let the disease enter the farm** - Clean own self and everything else that has been near other animals in the market or other farms. The new pigs should be kept away from healthy stock for at least 30 days. Dis-infect and wash shoes, clothes and hand before & after contact with pigs to prevent spread of disease.
- iv) **Don't borrow the disease** - If equipment, tools or pig supplies are borrowed from other farms, always clean and disinfect them before bringing them in contact with healthy animals and their habitats.
- v) **Know the signs** - A check must be kept on pigs. An increase in deaths should be noticed with very high fever (41-42 °C), sudden death within 1-3 days, reddening of skin of ear tip, tail and ventral aspects of chest and abdomen should be immediately reported to the nearest Veterinarian.



- vi) **Report sick animal** - Every unusual sickness or death of pigs should be immediately reported to the nearest Veterinary Centre.
- vii) **Guidelines for farm personnel** - Inter-sectional movements of farm personnel should be restricted. While leaving the farm premises, farm personnel should clean themselves thoroughly with disinfectants and change their clothing and shoes.

IV.5 Advice on how to decontaminate the sty/pen

The following advice should be followed in respect of decontamination of the sty/ pen:

- i) After the culling of the pigs, the area must be cleaned.
- ii) Take all protective measures outlined in the Action Plan before starting the cleaning process.
- iii) Collect any faeces scattered around the yard into a pile to be buried. The faeces should be buried at a depth of at least 1 metre.
- iv) Clean all areas very well with detergent and water.
- v) Discard all disposable items used to protect the person such as gloves, plastic bags, masks, etc. Place reusable items into a bowl with detergent and water for washing.
- vi) Wash hands very well with soap and water.
- vii) Shower/wash body using soap and water and wash hair.
- viii) Take utmost care not to contaminate the body. If not discarded wash clothes worn during the cull/clean up; use detergent and hot or warm water.
- ix) Dry clothes in the sun.
- x) Any item that may be used again such as rubber gloves or boots should be washed very well with disinfectants/soap/detergent and water. To ensure the items are clean, wash twice.
- xi) Always wash hands after handling contaminated items.



Annexure-I

Proforma for referring clinical material to laboratory for diagnosis of African Swine Fever

1.	Name of the sender (e.g. Department, Ministry, Agency, Individual etc.)
2.	Address (of the corresponding Office) with Telephone /Fax No. E-mail
3.	Location from where material was collected Latitude: _____ Longitude: _____
a	Farm/ Backyard:
b	Village:
c	Block:
d	Circle:
e	District:
f	State:
4.	Species from which material was collected: Domestic pig/ Wild Boar:
5.	Susceptible population of pig (in farm/ village/ area)
6.	Nature of material (Tissue, swabs, blood serum) & number
7.	Transport medium used (on ice/ PBS / tissue culture medium) :
8	Manner of dispatch* Special messenger/ Courier
9	When disease was first notice/ reported along with symptoms (date, month)
10	Morbidity (number & percentage of sick pigs):
11	Mortality (number & percentage of pigs died):
12	Vaccination history in last one month whenever applicable; (Name of vaccine and date of vaccination)
13	Preliminary diagnosis if any & basis for the same



Epidemiological information for unusual mortality of pigs

District: **Block:** **Village** **Village census code**

1	Latitude of the village	
2	Longitude of the village	
3	Total Pig population of the village	
4	Method of rearing (intensive/ semi-intensive or backyard)	
5	Start date of the disease event	
6	Date wise Mortality	(insert dates)
7	Total Death	
8	Probable source of infection	
9	Major PM findings	
10	No of sample collected	
11	Sample Collection date	
12	Sample submission date (to NERDDL)	
13	Disease control measures adopted till date	



Annexure-III

METHOD OF POST MORTEM EXAMINATION, SAMPLE COLLECTION, BURIAL OF OPENED CARCASS WITH OFFAL AND PERSONAL HYGIENE PRECAUTIONS FOR PREVENTION OF SPREAD

Post Mortem Procedure

1. Keep the carcass on a least contaminated surface.
2. Note all the abnormalities found externally specially if there are fomitus from nostrils, bleeding from nose, mouth and anus. Haemorrhagic patches on the ear, thigh and abdominal region.
3. Keep the carcass on dorsal recumbency and open it from inguinal region to xyphoid cartilage.
4. Note all the signs like blood stained peritoneal fluid, haemorrhage in intestine, kidney etc. Enlargement of spleen and lymph nodes. Caecal tonsil should be observed carefully.
5. GPS marking should be noted of the place where P.M. conducted.

Material Collection for Laboratory

1. Piece of liver, kidney and lymph nodes is to be collected preferably the tonsil. The piece should be of minimum one and half inch in length.
2. Maximum care should be taken to make less contamination while collecting the samples.
3. Samples should be divided in to three parts
 - a. One part in PBS/ ice for virological tests
 - b. One part in ice for bacteriological studies.
 - c. One part in 10% formaldehyde solution for histopathology.
4. All the containers lid must be properly fixed and outside portion of the container should be sanitised with disinfectant before packed.
5. All the container should be packed in an autoclavable plastic bag before it keep in a cool box.
6. All the container must be given a sample identification number.

Disposal of Carcass after Post Mortem Examination

1. Make a pit 5' in length 6' in depth and put the carcass in the pit with disinfectant/slake lime and cover them with soil. Care should be taken that scavengers cannot pullout the carcass from the pit.
2. Hand gloves, shoe covers etc should be burnt down after sanitization. Put it in the pit.
3. Gumboots should be properly sanitized before leaving the place of P.M.



Deep Burial:

5. The pit should be dug with requisite dimension with the help of JCB (where available). The JCB may be hired with the help of civil administration or with the help of PWD. Where JCB is not available, wage labours will have to be engaged in digging of burial pits.
6. Immediately after stunning, the pig is to be dropped into the burial pit.
7. After burial of the requisite numbers of pigs in the pit, bleaching powder should be sprinkled above the carcasses. If the farm have a stock of feed, than these are also to be buried. There should be at least 1/2 inch of bleaching powder above the carcasses. Than the pits are to be filled with soil. Above the soil, a layer of slaked lime is to be sprinkled adequately.
8. The burial site is to be kept in a bamboo enclosure and should not be opened for a period of 6 months, a sign board in this regard is to be displayed near the burial pits.

Over ground Burial:

In case the water table is too high and pits cannot be dug without touching the ground water level, than over ground burial method can be used.

Method

1. Dig a trench of desired length X breadth in the soil so that it is about 50 cm above the ground water table
2. The length and breadth will depend upon number of carcasses to be buried.
3. Put a 30 cm layer of paddy straw, wood chips or alike material (bio degradable organic waste material) in the trench
4. Place carcasses one after another above the layer of paddy straw bedding without dumping one above another.
5. Treat the carcasses with liberal amount of disinfectants (bleaching powder, sodium hydroxide solution etc.)
6. Cover the carcasses with soil (Soil cover should be at least 1 meter above and around the carcasses)
7. Dig surface water diversion trench around the burial place
8. Erect temporary fences around the burial area (Note: the temporary fence must be in place for at least 9 months) to prevent soil erosion as well as to prevent access of unwanted scavenging animals, a sign board in this regard is to be displayed near the burial pits.

The killing method standardised by the technical committee of the A. H. & Veterinary Department, Assam is electrocution of animals by electric stunner with variable volt and time cap.

The culling process will be carried out with the following arrangements:

- I. **Culling Rapid Response Team (RRT):** For culling of animals by humane killing method, disposal of carcass through burial and disinfection of culling site. Basic training for the culling RRTs will be done prior to start of the culling procedure.

Culling RRT comprises of:

- | | |
|------------------------|------------------------|
| 1. Veterinary Officer- | 1 nos |
| 2. VFA | 2 nos. |
| 3. Gr-IV | 2 nos. |
| 4. Animal Handler | 9 Nos. (On hire Basis) |

- II. **Logistics:**

Stunning Device:

1. Electric Stunner: Voltage ranges from 150 to 450, 8-step up or down transformer with time slot of 10-20 seconds. Depending upon the size of the animals the volt of the device needs to be adjusted.
2. Animal Trap/ restrainers made up of MS or GI with adjustable plat.
3. Electric connection single phase/ alternator on mobile van.



PROTOCOL OF CULLING OF PIG IN THE INFECTED ZONE OF AFRICAN SWINE FEVER (ASF) OUTBREAK BY ELECTROCUTION (ELECTRICAL STUNNING) METHOD

The culling of pigs in the declared infected zones will be performed in a centralized culling area with all required amenities for killing of pigs by humane method and disposed off the carcass through deep burial or over ground shallow burial method whichever is suitable as per the location selected by the civil administration in coordination with the A. H. & Veterinary Department.

The stunning and burial area must be located within the infected zone. The burial area should preferably be a high land and accessible to transportation of animals. If such a location is not available within the infected zone, than an adjacent place to the infected zone may be selected. Provision of electricity connection is to be made where electrical stunning will be practiced. If an adjacent place is selected, than the road leading to the place is to be closed during the culling operation and can only be opened after disinfection of the roads.

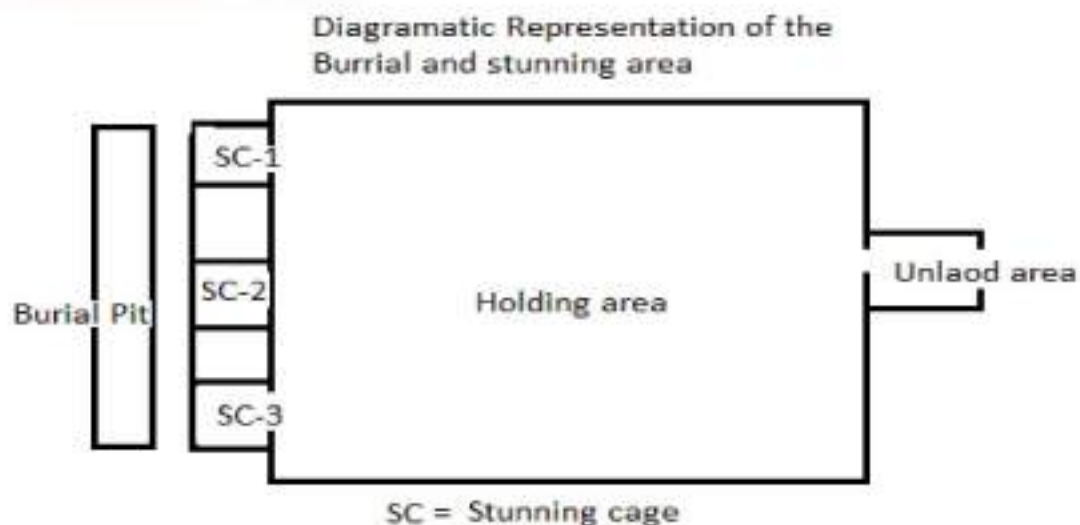
Killing of pigs by electrical stunning:

Killing of pigs by simple, easy to build wand for electric stunning of pigs. The front electrode is placed behind the pig's ear. It must not be placed on the neck. The front electrode is curved to fit the shape of the pig and it is 4 inches (10.5 cm) long and 1 inch (2.8 cm) wide. As per the standard the stunning for killing of pigs will be at 250- 350 volt according to size of the pig. As soon as the pig is killed, it needs to be thrown in the burial pit and the same process shall be repeated in case of next pig. The process will continue till the completion of the entire culling operation for the day.

Disposal of carcass by burial method:

The burial area will have:

1. A bamboo fenced pig holding area (20 mts X 20 mts) for pigs.
2. Burial pits
 - a. For 100 adult pigs, the area needed is 2 mts X 5 mts X 6 mts (depthXlengthXbreadth)
 - b. Pig burial pit will be adjusted according to the number of pigs to be culled in the area
3. If the water table is too high preventing deep burial, than over ground burial will have to be made following the procedure as detailed in the description part for burial.
4. 3 stunning cages (1 X 0.5 X 0.5 cu mts. each)
5. A bamboo fenced unloading area (4 mts X 4 mts)





III. Personal Protective Equipments (PPE):

- a. PPE kit for RRT members.
- b. Thick plastic gloves and gumboots for the persons engaged in stunning.

IV. Disinfection: Clean up and disinfection

Clean up & disinfection is the last stage of control & containment. The infected premises are to be disinfected after pigs and infected material have been destroyed and disposed off. Different protocols may be considered for clean-up and disinfection of commercial and backyard pig farms. The following procedure may be adopted for cleaning and disinfection of the premises and farm implements:

- i) Washing and disinfection of walls, floors and ceilings of the infected establishments must be performed aiming at the removal of all organic materials. All sheds in the premises should be cleaned which includes washing of floors & walls with (Neogen® Viroxide Super™), 3% calcium hydroxide solution; white-washing of concrete areas with lime; spraying the areas with 4% formalin; fumigation of closed chambers and formalin; treating all equipments with 2% sodium hypochlorite solution for 48 hrs etc.
- ii) All units which are physically or functionally connected to the establishment (i.e. creep area, growing pen, sty) must be properly disinfected. Vehicles, used for transporting live animals and animal feed must also be disinfected.
- iii) All equipment inside the house such as drinkers and feed pen must be washed and treated with a disinfectant for at least 48 hours.
- iv) Water reservoirs must also be emptied, washed and disinfected.
- v) Feed tanks (silos) need to be emptied, washed with a hot water-pressure pump and subsequently fumigated.

A list of disinfectants which are effective against ASF virus, their concentration and recommended use are mentioned below:

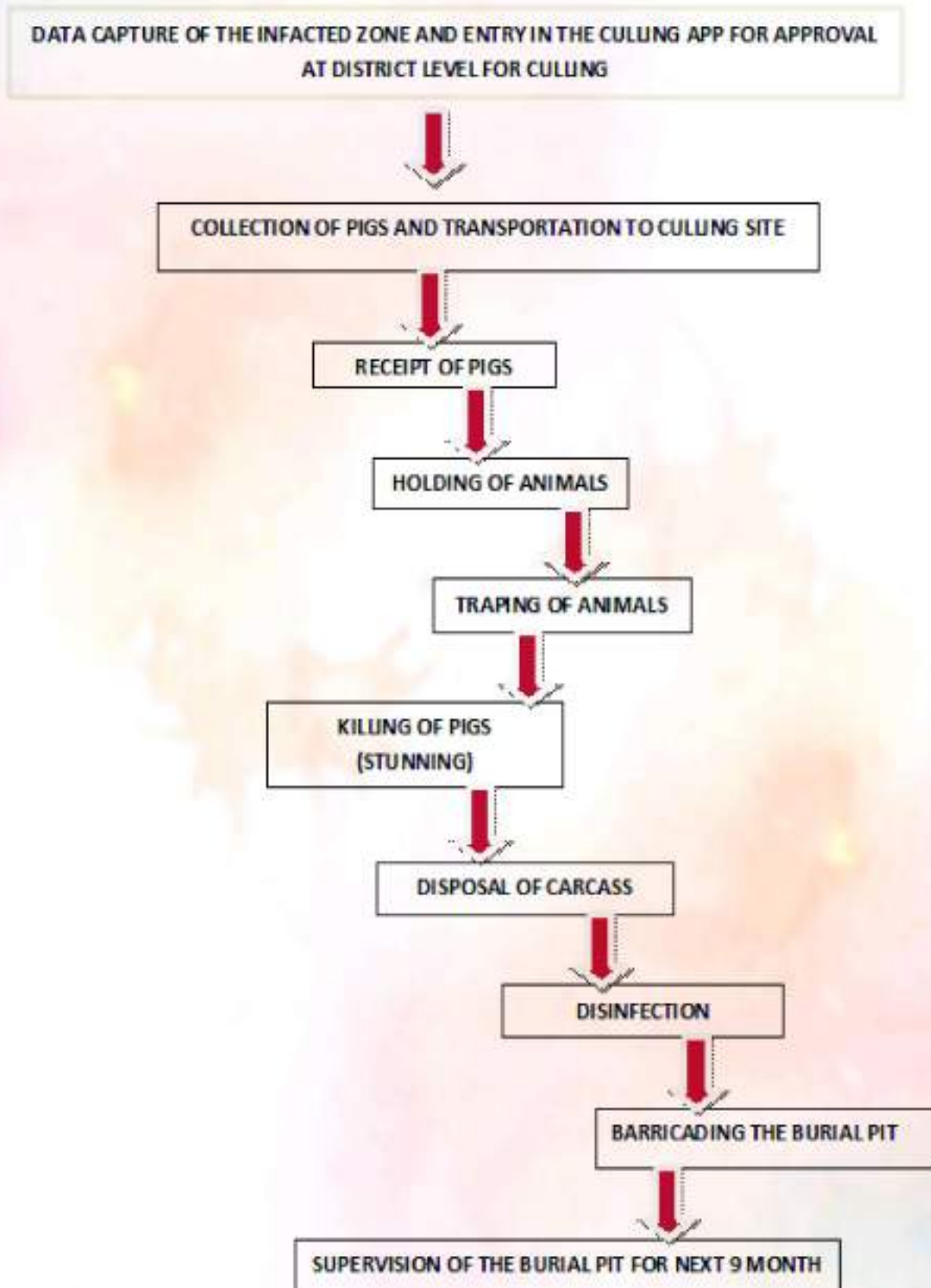
- i) Rectified spirit can be used for cleaning of hands, feet of farm workers and visiting officials.
- ii) 2% solution of NaOH should be used at the entrance on foot mats to clean the shoes. This solution can also be used to scrub and clean gumboots and other items.
- iii) Sodium hypochlorite : 2% active chlorine solution (disinfection of equipment)
- iv) Quaternary ammonium salts: 4% solution (treatment of walls, floors, ceilings and equipment).
- v) Calcium Hydroxide: 3% solution (treatment of walls and floors).
- vi) Cresolic acid 2.2% solution: For treatment of floors.
- vii) Synthetic phenols 2% solution: For treatment of floors.
- viii) Vircon-S®, Neogen® Viroxide Super™.
- ix) Formalin and potassium permanganate for fumigation.

V. Supervision: Representative from civil administration, police administration and A. H. & Veterinary Department will supervise the overall operation.

VI. Completion of culling procedure and report generation: Final culling report of the day will be sent to District Culling Control Room for transmission to the Central Control Room.



CULLING OPERATION FLOW CHART:





The Equipment - the Crate and the Tong with Voltage Transformer





The Animal - entering the animal in the restraining crate





Actual Stunning Process





Annexure-V

(This financial outlay was proposed to Government of India with pig mortality)

Financial involvement for Control and Containment operation in the Infected Zone of seven declared epicenter for African Swine Fever and 100 more projected epicenters in the State

The animal details of all villages within 1 KM radius of the foci of infection has been assessed as under:

Sl. No.	District	Name of Epicenter	Block	No. of Villages in 1 km Radius	Present Population in Number (body weight)				
					Piglet	Grower/ Finisher/ Adult	Finisher/ Adult/ Breeding Boar/Sow		Adult/ Breeding Boar/Sow
					Up to 15 kg	15-40 kg	40-70 kg	70-100 kg	Above 100 kg
1	Biswanath	Bor Tamuli-2	Pub Chaiduar	5	406	27	120	148	17
2	Sivasagar	Kheloa	Kheloa	5	96	105	144	85	40
3		Nitai Pukhuri (Bhatgaz)	Demow	4	35	73	96	54	32
4		Kotiori		4	20	80	90	100	50
5	Kamrup (M)	Gorchuk	Guwahati	2	0	0	0	0	0
6	Jorhat	Bormukali	Jorhat North West, Dekorborah	3	517	363	288	144	135
7	Dhemaji	Pipalguri	Sissiborgaon	12	126	358	337	739	0
Total				35	1200	1008	1075	1270	274

Total number of pigs to be culled in 7 epicenter in 5 districts = 4825

However, since the date of declaration of 7 epicenters, unusual mortality in pig was continuing and spreading new areas in the affected and adjoining districts of the State. The cumulative pig mortality in the affected and adjoining districts as on 15.07.2020 is tabulated as under:

Sl. No.	Affected District of Assam	Total pig population As per 20 th livestock census	No. of Village affected till date	Susceptible population in the affected villages	Nos. of pig affected	Mortality up to 15.07.2020
1.	Dhemaji	232517	81	34419	8710	6841
2.	Sivasagar	64021	37	11113	4027	1516
3.	Biswanath	92600	21	11329	825	313
4.	Lakhimpur	195875	135	52728	1774	1177
5.	Dibrugarh	111522	67	6147	1257	432
6.	Kamrup (Metro)	28351	9	1619	124	65
7.	Jorhat	101073	5	2864	299	61
8.	Golaghat	118500	8	4939	3323	1927
9.	Nagaon	50182	1	181	181	82
10.	Majuli	34345	50	15805	4964	4161
11.	Morigaon	31322	1	252	252	217
12.	Karbi Anglong	188380	4	781	25	10
13.	West Karbi Anglong	83069	2	692	539	298
Total		1331757	421	142869	26300	17100

Presuming the declaration of 100 more epicentres along with the declared 7 (seven) epicentres, the overall financial involvement for culling compensation, disinfection, and culling & disposal operation will be as under:

Sl. No.	Epicentres	Particulars	Financial Involvement (Rs. in Lakhs)
A	7 Declared Epicentres	Culling Compensation (for 7534 pigs)	1,273.28
		Logistics, disinfections and operation	377.46
B	100 Projected Epicentres	Culling Compensation (for 50,000 pigs)	8,096.87
		Logistics, disinfections and operation	4,676.11
TOTAL			14,423.72

(Rupees One hundred forty four crore twenty three lakh seventy two thousand)



GOVERNMENT OF ASSAM
ANIMAL HUSBANDRY AND VETERINARY DEPARTMENT