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# **Proposal for a control plan for ASF in Georgia**

**Expert mission to Georgia July 2<sup>nd</sup> until July 13<sup>th</sup>, 2007**

**Bern, July 19<sup>th</sup> 2007**

# Index

Index.....	2
1. Executive Summary .....	4
1.1 Summary .....	4
1.2 Recommendations .....	4
2. Abbreviations .....	6
3. Mission .....	7
4. Background .....	8
4.1 Pig production in Georgia .....	8
4.2 Situation .....	8
4.3 Analysis of existing action plan .....	9
5. Structure of Veterinary service for ASF disease control.....	10
5.1 Strategic lead .....	10
5.1.1 National Task force .....	10
5.2 Operational national level .....	10
5.2.1 Crisis Centre at Ministry of Agriculture .....	10
5.2.2 National service of Food safety, Veterinary and plant protection.....	10
5.2.3 Laboratory (LMA).....	11
5.3 Regional level.....	11
5.4 District level .....	11
5.5 Border inspection .....	11
5.5.1 Import .....	11
5.5.2 Export .....	12
5.6 Human resources .....	12
6. Control strategy (overview) .....	13
6.1 Recommended control strategy for Georgia .....	13
6.2 Deviations from standards according OIE .....	14
7. Control measures.....	15
7.1 Free zone .....	15
7.1.1 Definition / criteria .....	15
7.1.2 Movement of live pigs and confinement.....	15
7.1.3 Pork meat.....	15
7.1.4 Disease investigation and epidemio-surveillance .....	16
7.1.5 Controls at border of disease “free zone” .....	16
7.1.6 Cleaning and disinfection.....	16
7.1.7 Waste management .....	16
7.1.8 Compensation.....	16
7.2 Intermediate Zone .....	16
7.2.1 Definition .....	16
7.2.2 Movement of live pigs and confinement.....	17
7.2.3 Pork meat.....	17
7.2.4 Disease investigation.....	17
7.2.5 Controls at border of disease “intermediate zone” .....	17

7.2.6	Cleaning and disinfection.....	17
7.2.7	Waste management .....	18
7.2.8	Compensation.....	18
7.3	Infected zone .....	18
7.3.1	Definition .....	18
7.3.2	Movement of live pigs and confinement.....	18
7.3.3	Pork meat.....	18
7.3.4	Cleaning and disinfection.....	18
7.3.5	Waste management .....	18
7.3.6	Compensation.....	19
8.	Communication .....	20
8.1	Internal communication – coordination of actions.....	20
8.1.1	Task force.....	20
8.1.2	Meetings of the task force .....	20
8.2	External communication .....	20
8.2.1	Information of the public.....	20
8.2.2	Information of the pig owners.....	20
9.	Compensation.....	22
9.1	Appreciation of the situation .....	22
9.2	Recommendations regarding compensation.....	22
9.3	Restocking of pig population .....	22
10.	Waste management .....	24
10.1	Domestic waste management.....	24
10.2	Waste of incoming ships .....	24
10.3	Recommendations .....	24
11.	Potential vector competence of ticks.....	25
12.	International reporting.....	26
13.	Long term improvement of biosecurity in pig production.....	27
14.	Annex (A 1-11) .....	28
A1	Plan of activities against ASF (by Ministry of Agriculture, Georgia).....	28
A2	Laboratory .....	32
A3	Epidemiological report on ASF outbreak in Georgia.....	34
A4	Recommendations for improvement of the epidemiological reporting system ...	36
A5	Maps of ASF outbreak – spread of virus over time .....	39
A6	TADR investigation form.....	43
A7	Disease investigation form for African Swine Fever in Georgia.....	45
A8	Epidemiological data management .....	48
A9	Sampling frame .....	50
A10	Recommendations for minimal biosafety in a pig pen.....	51
A11	ASF Mission AG ZOD Georgia, July 2 <sup>nd</sup> , 2007 until July 13 <sup>th</sup> , 2007- Agenda...	52

## 1. Executive Summary

### 1.1 Summary

Since April 2007, ASF, a highly contagious DNA virus, has spread to nearly every region of the country and thousands of small farmers lost their pigs. The virus can be spread by direct contact with infected pigs, by indirect contact such as clothes, equipment or specific ticks or through inappropriate waste management. It does not affect humans.

Since April, the Georgian government is concerned with the control of the region's first outbreak of African swine fever (ASF). An existing action plan is currently implemented by the authorities. There is evidence, that the resources and as well as the inter-ministerial coordination mechanisms in place, may not be sufficient for successful entire implementation of the action plan.

Most of the pigs in Georgia are not held in pig pens. Free-roaming pigs are still present in both western and eastern Georgia. The pigs have free access to slaughter and kitchen waste, because most of the dump is not confined. Georgia is a net importer of pig products from different countries, including Brazil, the Netherlands and China. Wild boars are present in different locations of Georgia.

On the basis of this situation, of investigations and discussions in the field in east and west Georgia and with a close collaboration with representatives of the different involved institutions of Ministry of Agriculture (MoA) an ASF control plan is elaborated and proposed to the government of Georgia.

### 1.2 Recommendations

- The following recommendations are given regarding the disease control strategy:
  - To establish geographically “disease free zones” (short term), enlargement of these disease free zones by strict control measures in the intermediate zones (mid term), and to eradicate ASF from Georgia (long term).
  - To prohibit free roaming pigs and to confine pigs in pig pens
  - To restrict the movement of pig products (fresh porc meat and meat products) in infected zone and intermediate zone.
  - To improve the waste management
  - To implement a system of disease investigation and epidemio-surveillance
  
- The following recommendations are given regarding the organisational structure to coordinate ASF control:
  - To establish a national task force responsible for the strategic lead of ASF control plan. It consists of the following members:
    - Chief of Crisis Centre at Ministry of Agriculture
    - Chief of National service of Food safety, Veterinary and plant protection
    - Chief of Laboratory (LMA)

- Chief of border inspections (Ministry of Finance, customs department)  
The national task force reports to the Minister of Agriculture
- to designate a responsible person for the operational implementation of the ASF control programme (Head of ASF control operations) . The Head of ASF control operations is member of the task force and reports weekly to the task force.
  
- The following recommendations are given regarding the external Communication strategy:
  - to continue with general information for the population
  - to improve specific information for pig owners
  
- The following recommendations are given regarding the compensation fund:
  - To decline compensation for free roaming pigs
  - To compensate culled clinically healthy or sick pigs only if the owner can proof, that his pig has been kept in an adequate confinement.
  - To decline compensation in cash and to evaluate a system where each culled or reported dead pig is compensated with a “restocking-piglet”
  - To restock animals in a district after a delay of at least 40 days without positive laboratory results in the district (“free zone”)
  
- The following recommendations are given regarding the border inspection:
  - to place the Border inspection point (BIP) at the territorial entering point and to ensure the availability of veterinary knowledge. This allows the prevention for imports of diseased animals and food, feed and plants of uncertain origin, and for future prevention of introduction of highly contagious diseases via imports (e.g. ASF).
  - to equip the BIP’s with facilities for checks of live animals or food of animal origin (raw meat, meat products, dairy products)
  - to guarantee the technical support of the veterinary officers at the BIP through a central veterinary unit within the customs department.
  - to ensure communication and cooperation between BIP and domestic food safety and veterinary service
  
- The following recommendations are given regarding the waste management:
  - to prevent the free access of free roaming pigs to waste
  - to collect waste from ships in the harbour and eliminate it correctly

## 2. Abbreviations

ASF	African Swine Fever
BIP	Border inspection point
EC	European Community
FAO	Food and Agriculture Organization
IVI	Swiss Institute of Virology and Immunoprophylaxis
MoA	Ministry of Agriculture
FSVPP	National Service for Food Safety, Veterinary and Plant Protection
OIE	Office international des épizooties
SDC	Swiss Development and Cooperation Agency
SFVO	Swiss Federal Veterinary Office
TADR	Threat Agents Detection and Response

### 3. Mission

On the request of the government of Georgia, the Swiss Development and Cooperation Agency (SDC) decided on an expert mission to assist Georgia in the ongoing disease outbreak management for the control of African Swine Fever (ASF).

The major objectives of the mission were:

- Proposal for a mid term and long term contingency plan for control of ASF on the basis of the specific situation in Georgia
- Support in epidemiological analysis (disease investigation) of the outbreak and data management

The mission team consisted of 4 experts:

- Anette Baumer, laboratory expert  
*Swiss Institute of Virology and Immunoprophylaxis (IVI)*
- Kaspar Jörger, disease control expert  
*Office of veterinary service, Grisons*
- Manon Schuppers, epidemiologist  
*SAFOSO*
- Lukas Perler, disease control expert, head of mission  
*Swiss Federal Veterinary Office (SFVO)*

The present proposal is the result of a close collaboration with representatives of the different institutions of the Ministry of Agriculture in Georgia. Field visits to various key places of the outbreaks were organized to evaluate the practicality of control measures.

Furthermore, the proposal takes into consideration the information and reports of recent international assessment missions regarding ASF in Georgia:

- ASF in Georgia, report to the government of Georgia on behalf of the world bank (15<sup>th</sup> June 2007)
- EC/FAO/OIE Mission report (11-14<sup>th</sup> June 2007)
- Information from TADR programme in Georgia (threat agents detection and response - US Department of Defence)

The mission team underlines that a strong coordination of the international support is needed.

## **4. Background**

### **4.1 Pig production in Georgia**

Georgia has a considerable number of small pig holders in rural areas and pork meat is widely consumed. According to the national statistics of the Ministry of Agriculture, Georgia has a total pig population of 517'000 animals. In the absence of an animal identification system, it is most likely that the statistical number is an underestimation of the actual situation.

Most pig holders (>90%) only have a very small number of animals (1-2 pigs) for their own meat supply (subsistence farmers). There is a lack of continuous containment of pigs and free roaming is widely practiced. Some animal holders keep their pigs contained over night. Mostly in suburban areas, there is a lack of facilities to contain and feed pigs. A commercial pig production system with defined standards of bio-security is almost absent.

Free roaming pigs are widely present in the rural areas. They have free access to waste (including slaughter and kitchen waste), because most of the dump is not confined. There are no slaughterhouses present in Georgia, therefore the pigs are slaughtered at the farm level with varying methods of waste disposal.

Live animal trade mainly occurs on the level of individual villages. Pork meat that is not consumed at the farm level is sold on the local market. There is almost absence of a commercial national trade with livestock or pork meat.

Georgia is a net importer of pork meat (fresh and frozen) to cover the national consumption. The main countries of origin are Brazil (Jan-May 2007: 2162 tons) and the Netherlands (Jan-May 2007: 603 tons). Some pork meat has been imported from China (Jan-May 2007:130 tons). The imports mainly arrive with ships through the city Poti. Some meat is imported from the neighbouring country Armenia.

Wild boars are present in different locations of Georgia, mainly in East Georgia and in the border region to Turkey. There is no clear estimation about the precise size of this population.

### **4.2 Situation**

Georgia has been hit by a nationwide outbreak of African Swine Fever (ASF). ASF outbreaks were simultaneously reported in different locations beginning April 22, 2007. The simultaneous reports from different locations at the end of April indicate that the index case occurred already several weeks before. The epidemiological data suggest that the outbreak started at the Poti harbour region, most probably due to direct contact of free roaming pig to insufficiently eliminated waste from the ships.

Until 9 July, ASF virus has spread almost all over the country. According to the ministry of Agriculture, 56 out of 61 districts were declared as infected. However, it has to be highlighted that virtually all cases are defined only by clinical diagnosis and/or collection of dead pigs. Laboratory results only are available from a limited number of samples and districts.

For detailed analysis of the ASF outbreak, it is referred to the epidemiological report in annex 3

### **4.3 Analysis of existing action plan**

The government of Georgia has adopted a “Plan of activities against African Swine Fever Virus” (see annex 11). This plan contains a list of 15 actions for the control of ASF. Movement restriction, confinement and culling of free roaming pigs and cleaning/disinfection are among the most important measures listed. The veterinary structures for the control management are described.

Due to limited resources, the measures have not achieved the desired compliance (e.g. action 3 – slaughtering of pigs in dangerous points). Containment of pigs (action 5) is only partially respected. Sick and dead pigs were observed during the field visits of the expert team in various villages as well as free roaming pigs (eastern and western part of Georgia).

There is room for improvement in coordination and communication between the headquarter office at the MoA, the FSVPP, the Laboratory (LMA) and the border inspection (customs department).

In summary, the action plan contains useful measures. However, its successful implementation is endangered due to a lack of sufficient resources and inter-ministerial coordination.

It is recommended to shift the implementation focus from day to day action more to a mid term / long term strategy, as it is outlined in the present proposal for the control of ASF.

## **5. Structure of Veterinary service for ASF disease control**

The present chapter contains the management elements by the government of Georgia that are considered necessary to implement a national control programme for ASF.

### **5.1 Strategic lead**

#### **5.1.1 National Task force**

A national task force should be established under the responsibility of the MoA. It is responsible for the overall coordination of the national ASF control and decides on the adoption of the control plan. The task force meets at least weekly. At minimum, the following members are represented:

- Chief of National service of FSVPP
- Chief of Crisis Centre at MoA
- Chief of Laboratory (LMA)
- Chief of border inspections (Ministry of Finance, customs department)

The national taskforce assigns the responsibility for the operational implementation of the ASF control plan to a designated person (Head of ASF control operations). The head of ASF control operations is empowered to coordinate the tasks of all involved governmental organizations at the operational level.

### **5.2 Operational national level**

#### **5.2.1 Crisis Centre at Ministry of Agriculture**

The Crisis centre should be placed at the MoA for the management of the overall data of the ASF outbreak and control. All data (diagnostic results, data of disease investigation from field, confirmation of control measures, border inspections) should be reported to the crisis centre on a daily basis.

The Crisis Centre is responsible for the:

- Analysis of disease investigation (spread of virus over time)
- Updating of borders of free zones, intermediate zones, infected zones
- Daily bulletin of the national situation regarding ASF.

The chief of the Crisis Centre reports the results to the Head of ASF control operations.

#### **5.2.2 National service of Food safety, Veterinary and plant protection**

The national service of FSVPP is the responsible body for the risk management and therefore for the implementation of the measures to control ASF in Georgia. It is in direct contact with the regional offices:

- Disease investigation in the field
- Implementation of control measures in the free zones, intermediate zones, infected zones
- Planning of sample frame for epidemio-surveillance in free zones, intermediate zones
- Contact to responsible body for border inspection
- Culling of animals in intermediate zones

The chief of the national service of FSVPP reports to the Head of ASF control operations. The data of disease investigation from the field and the confirmation of control measures are reported to the Crisis Centre at the MoA.

### **5.2.3 Laboratory (LMA)**

The laboratory (LMA) is responsible for the collection of samples and laboratory diagnosis of ASF. Its diagnostic capability includes antigen detection (real-time PCR and Antigen ELISA) and Antibody detection (Antibody ELISA). It conducts with its mobile teams the sampling for epidemio-surveillance in the disease free zones and in the intermediate zones.

The laboratory (LMA) is responsible for:

- Diagnostic of ASF samples from individual outbreak spots
- Sampling for epidemio-surveillance in diseases free zones and intermediate zones

The chief of the Laboratory reports to the Head of ASF control operations. The results of the laboratory diagnostic and of the epidemio-surveillance are reported to the Crisis Centre at the MoA.

## **5.3 Regional level**

The national service of FSVPP has a contact office in each region of Georgia. The chief of the regional office is responsible for the implementation of the control measures at regional level. The regional office coordinates the work. It is in direct contact with the veterinary officers of the districts.

The chief of the regional department reports to the chief of the national service of FSVPP. The results of the disease investigation from the field and the confirmation of the control measures are reported directly to the Crisis Centre at the MoA.

## **5.4 District level**

The veterinary officer in each district has at least one “disease control team” at his disposition. The disease control team is responsible for the practical implementation of the control measures at district level. A “disease control team” is composed by:

- Official Veterinarian
- Hunter
- Truck driver (transport of dead pigs to burial place)
- Disinfection technician

The “disease control team” consists of 5-6 people in total.

Additional human resources are needed for the check-points at the borders of the disease “free zones” and “intermediate zones”.

## **5.5 Border inspection**

### **5.5.1 Import**

The Customs Department is responsible for sanitary and veterinary controls of live animals and food products of animal origin at the point of territorial entry (border inspection points – BIP). It belongs to the Ministry of Finance. The expert team has recognized that there is a lack adequate facilities for checks of live animals or food of animal origin (raw meat, meat products) and that there might not be sufficient veterinary knowledge at the BIP. Therefore, only documents of imported goods and animals are controlled.

The National Service of FSVPP of the MoA is responsible for the domestic control of food safety and livestock. Communication and collaboration between the customs department and the National Service of FSVPP needs to be improved.

The following structure is considered necessary for an effective veterinary border inspection:

- The BIP must be situated at the territorial entering point and the availability of veterinary knowledge must be ensured. This allows the prevention for imports of diseased animals and food, feed and plants of uncertain origin, and for future prevention of introduction of highly contagious diseases via imports (e.g. ASF).
- The BIP's must be equipped with facilities for checks of live animals or food of animal origin (raw meat, meat products, dairy products)
- A central veterinary unit within the customs department has to guarantee the technical support of the veterinary officers at the BIP.
- Communication and cooperation between BIP and FSVPS has to be ensured directly after entering the country

### **5.5.2 Export**

If foreign countries require the disinfection of all containers, lorries and train wagons leaving Georgia, an adequate disinfection barrier has to be constructed. The expert team recommends contacting a specialized company for further information. However, such a measure has more of a psychological value as disinfection of the outside of vehicles and containers is not among the most important measures to prevent the spread of ASF in to another country.

### **5.6 Human resources**

In addition to veterinary trained personal, the control of ASF needs considerable human resources. It is recommended to recruit additional governmental workers for non-strictly veterinarian tasks (e.g. physical controls at check-points, disinfection measures). They can be specially instructed police officers or representatives from other appropriate organisations. Furthermore, the involvement of private veterinarians is recommended.

## **6. Control strategy (overview)**

### **6.1 Recommended control strategy for Georgia**

On the basis of the situation Georgia, the mission team has elaborated a proposal for a control plan for ASF in Georgia. It contains the following main considerations and elements:

Two main long term strategies are possible for the control of ASF:

- total depopulation of pigs
- progressive establishment of disease free zones.

The total depopulation of pigs nationwide has to be completed within a limited time. It requires a demanding compensation scheme to achieve sufficient compliance. Therefore, we consider this option as not appropriate to the situation in Georgia. In respect of the limited funds and human resources of Georgia, we propose to implement a strategy of “progressive disease free zones”.

The aim of this control plan is to establish geographically disease “free zones” (short term), to enlarge these “free zones” by strict control measures (mid term), and to eradicate ASF from Georgia (long term). Because of poor possibilities of confinement of pigs by the animal holders, the epidemiological unit is defined as a village and the zones are organized according to the individual districts of Georgia.

The free zones are separated from the rest of the country (“infected zone”) by an “intermediate zone”. Most of the resources for control activities have to be concentrated in the intermediate zones. This will allow these districts to obtain over time the status of “free zone” under defined criteria. An epidemio-surveillance is established in the disease free zones and in the intermediate zones. The efforts in the rest of the country are restricted to minimising the spread of the virus.

The control measures include restriction of movement of live pigs, semen/embryos/ova and pork meat. The confinement of pigs is recommended as well as the proper elimination of slaughter/kitchen waste. Free roaming pigs have to be killed. The culling of diseased pigs and the collection and proper elimination of dead pigs are critical.

The communication strategy includes the establishment of efficient structures of coordination within the MoA (internal communication) and information to the public via leaflets, direct contacts and mass media (external communication).

Small scale pig production is important for the livelihood in rural areas of Georgia. The cooperation of the animal owners with the MoA is important for the success of any adequate disease control measures against ASF. This cooperation can only be achieved by a defined compensation fund for culled and dead pigs.

Border inspections, immediate information to the national service for FSVPP and a proper treatment of the waste of ships prohibit a repeated entry of ASF virus (or other contagious diseases) to the territory of Georgia. Export controls prevent further spread of ASF.

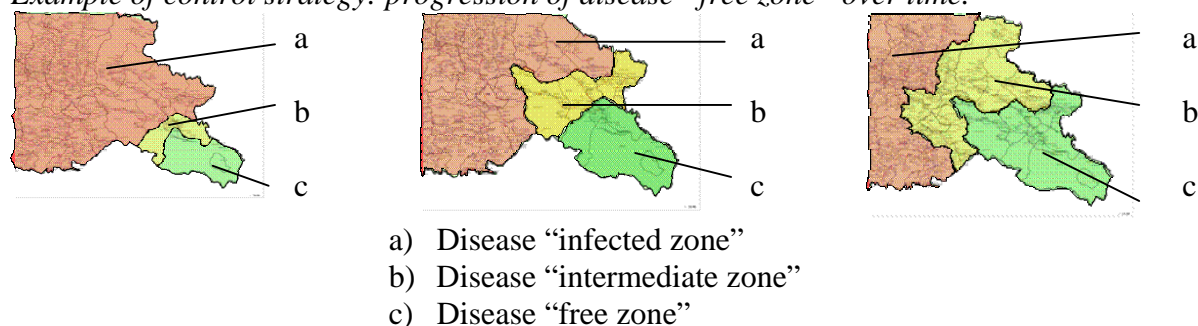
## ***6.2 Deviations from standards according OIE***

The international standards for control of highly contagious diseases divide the territory in a “protection zone” and a larger “surveillance zone” around each diseased epidemiological unit. This approach is mainly designed to handle an acute outbreak. The present situation with the outbreak ASF in Georgia limits the possibility to implement this approach because of the massive geographical extend and of the limited resources. Therefore, a slight deviation has been adopted for the proposed control plan regarding the zones. The resources can be focused to the enlargement of disease “free zones” and of “intermediate zones”.

## 7. Control measures

The proposed control strategy divides the pig population of the country in subpopulations. Therefore, ASF disease “free zones”, “intermediate zones” and “infected zones” are declared. The control measures are implemented according the status of the individual zone. The national “task force” is responsible for declaring the ASF zones and the Crisis Centre at the MoA for updating the mapping of the zones.

*Example of control strategy: progression of disease “free zone” over time.*



### 7.1 Free zone

Disease “free zones” are geographically defined areas within Georgia where ASF virus is not present. The aim of the control measures is to guarantee the long term absence of ASF.

#### 7.1.1 Definition / criteria

- The border of a “free zone” is delimited by the districts borders in consideration of additional geographical circumstances.
- No ASF cases have been reported in the whole disease “free zone” for at least 40 days (confirmation by laboratory tests).
- Sick pigs with clinical signs consistent with ASF and dead pigs (suspect cases) are consistently sampled (laboratory diagnosis) and eliminated.
- Epidemio-surveillance is carried out (see chapter 7.1.4). The sampling is carried out from slaughtered pigs, from blood samples of live pigs and from wild boars.

#### 7.1.2 Movement of live pigs and confinement

- The pig holders are advised to confine their pigs. Free roaming pigs are killed by the disease control teams – including wild boars.
- Free movement of live pigs (for trade) within “free zone” is allowed.
- The entry of live pigs to the “free zone” is prohibited.

#### 7.1.3 Pork meat

- Free trade of pork meat (fresh and products) within “free zone” is allowed.
- The entry of pork meat (fresh and products) to the “free zone” is prohibited. Imported pork meat is allowed.
- The exit of pork meat (fresh and products) out of the free zone is allowed.

#### **7.1.4 Disease investigation and epidemio-surveillance**

- It is mandatory to report the occurrence of sick pigs with clinical signs consistent with ASF and dead pigs to the veterinary officer of the district (suspect case).
- The district “disease control team” verifies the suspect cases and fills out the disease investigation form (see form in annexe) and reports it to the national data headquarter.
- Suspect cases are sampled and the samples are sent to the laboratory.
- Samples are taken from healthy slaughtered pigs, blood samples from healthy live pigs and from wild boars. The minimum required sample frame for the “free zone“ is described in annex 9

#### **7.1.5 Controls at border of disease “free zone”**

- Official check-points at roads of disease “free zone” are established to guarantee that live pigs and pork meat (fresh and products) do not enter the free zone. This requires considerable human resources. Controls can be carried out by specially trained police officers or members of other appropriate institutions.

#### **7.1.6 Cleaning and disinfection**

- As a preventive measure, the access of visitors to confined animal holdings without a minimal standard of biosafety is prohibited. The minimal biosafety measures are described in annex 10.

#### **7.1.7 Waste management**

- It is prohibited to feed meat to pigs (from slaughter/kitchen waste). Swill feeding only is allowed after heat treatment (boiling temperature for > 20 minutes)
- Any contact of live pigs with meat waste (slaughter/kitchen waste) has to be prevented (e.g. fencing of dump).
- Meat waste (slaughter/kitchen waste) has to be buried or burned.

#### **7.1.8 Compensation**

- A compensation fund has to be established for the “free zone”. The compensation is carried out according the recommendations in chapter 9. Consequently, after reoccurrence of ASF cases, the former “free zone” is declared as “intermediate zone”.

### **7.2 Intermediate Zone**

Disease “intermediate zones” are geographically defined areas within Georgia that divide “free zones” from “infected zones” and where most control activities are taken to eradicate the virus. The control measures are concentrated in the intermediate zones. This will allow these zones to fulfil the criteria of disease “free zones” over time.

#### **7.2.1 Definition**

- The border of a disease “intermediate zone” is delimited by the districts borders in consideration of additional geographical circumstances. It is adjacent to the “free zone” and divides the latter from the “infected zone”.
- ASF cases have been reported within the last 40 days (confirmation by laboratory test).

- Sick pigs with clinical signs of ASF and dead pigs (suspect cases) are consistently sampled (laboratory diagnosis) and eliminated.
- Epidemio-Surveillance is carried out (see chapter 7.1.4). The sampling is carried out from slaughtered pigs, from blood samples of live pigs and from wild boars.

### **7.2.2 Movement of live pigs and confinement**

- The pig holders are advised to confine their pigs. Free roaming pigs are killed by the disease control teams – including wild boars.
- The movement of live pigs (for trade) within “intermediate zone” is prohibited.
- The entry of live pigs to the “intermediate zone” is prohibited.

### **7.2.3 Pork meat**

- The trade of pork meat (fresh and products) within “intermediate zone” is prohibited.
- The entry of pork meat (fresh and products) to the “intermediate zone” is only allowed from the “free zone”. Imported pork meat is also allowed.
- The exit of pork meat (fresh and products) out of the “intermediate zone” is prohibited.

### **7.2.4 Disease investigation**

- It is mandatory to report the occurrence of sick pigs with clinical signs of ASF and dead pigs to the veterinary officer of the district (suspect case).
- The district “disease control team” verifies the suspect cases and fills out the disease investigation form (see form in annexe) and reports it to the national data headquarter.
- Suspect cases are sampled and the samples are sent to the laboratory.
- Samples are taken from non-healthy slaughtered pigs and blood samples from non-healthy live pigs and from wild boars. The minimum required sample frame is described in annex 9.
- Samples are taken from dead and culled animals.

### **7.2.5 Controls at border of disease “intermediate zone”**

- Official check-points at roads of disease “intermediate zone” are established to guarantee that live pigs / pork meat (fresh and products) do not enter or leave the intermediate zone. This requires considerable human resources. Controls can be carried out by specially trained police officers or members of other appropriate institutions.

### **7.2.6 Cleaning and disinfection**

- Cleaning and disinfection of diseased animal holdings is carried out after culling of the animals.
- As a preventive measure, the access of visitors to confined animal holdings without a minimal standard of bio-safety is prohibited. The minimal bio-safety measures are described in annex 10.
- Epidemio-surveillance

### **7.2.7 Waste management**

- It is prohibited to feed meat to pigs (from slaughter/kitchen waste). Swill feeding only is allowed after heat treatment (boiling temperature for > 20 minutes).
- Any contact of live pigs with meat waste (slaughter/kitchen waste) has to be prevented.
- Special attention should be given to the collection of blood during slaughtering.
- Meat waste (slaughter waste including blood / kitchen waste) has to be buried or burned.

### **7.2.8 Compensation**

- A compensation fund has to be established for the “intermediate zone”. The compensation is carried out according the recommendations in chapter 9.

## **7.3 Infected zone**

Disease “infected zones” are geographically defined areas within Georgia where ASF virus is present. It covers all country except “free zones” and “intermediate zones”. The aim is to reduce the spread of the virus with minimal resources.

### **7.3.1 Definition**

- The border of a disease “infected zone” is delimited by the districts borders under consideration of the geographical circumstances. It is adjacent to the disease “intermediate zone” and has no direct contact to the disease “free zone”.
- ASF virus is present in the pig population.

### **7.3.2 Movement of live pigs and confinement**

- Free roaming pigs are killed by the disease control teams – including wild boars.
- Dead pigs are collected and eliminated (burying) daily.
- The movement of live pigs (for trade) within “infected zone” is prohibited.
- The entry of live pigs to the “infected zone” is prohibited.

### **7.3.3 Pork meat**

- The trade of pork meat (fresh and products) within the “infected zone” is prohibited.
- The entry of pork meat (fresh and products) to the “infected zone” is only allowed from the “free zone”. Imported pork meat is also allowed.
- The exit of pork meat (fresh and products) out of the “infected zone” is prohibited.

### **7.3.4 Cleaning and disinfection**

- Cleaning and disinfection of diseased animal holdings is carried out after culling of the animals.

### **7.3.5 Waste management**

- It is prohibited to feed meat to pigs (from slaughter/kitchen waste). Swill feeding only is allowed after heat treatment (boiling temperature for > 20 minutes)
- Any contact of live pigs with meat waste (Slaughter/kitchen waste) has to be prevented.

- Special attention should be given to the collection of blood during slaughtering.
- Meat waste (slaughter waste including blood / kitchen waste) has to be buried or burned.

### **7.3.6 Compensation**

- The compensation fund is restricted to the “intermediate zone” and “free zone”. This is justified, because there are no stringent control measures in the “infected zones”. Also, it adds an incentive to a district to become an “intermediate zone”.

## **8. Communication**

### **8.1 Internal communication – coordination of actions**

#### **8.1.1 Task force**

Four different services (Crisis Centre, FSVPS, LMA and Customs) are mainly involved in the ASF disease control. Therefore, highest priority should be given to the coordination and communication between these stakeholders.

The “head of ASF control operation” of the taskforce is responsible for reports among the task force members.

#### **8.1.2 Meetings of the task force**

The weekly meetings of the task force should have the following agenda:

- Report of the recent results and findings in order to link field investigations and diagnostic information
  - Information about the actual situation in the free zone and intermediate zone
  - Information about the progress of the disease control measures
  - Epidemiological data
  - Laboratory results
- Analysis of the recent results
- Conclusions and decisions about further actions, including:
  - Decision on change of zone status (e.g. from intermediate zone into free zone)
  - Establishment of a new intermediate zone
  - Repopulation of free zone
  - Others....
- Report to minister of agriculture about progress of ASF disease control

### **8.2 External communication**

#### **8.2.1 Information of the public**

The information of animal holders and public is among the most critical issues to the success of the control plan. The public in Georgia has to be adequately informed about the ASF outbreak that Georgia is facing at the moment and about the ASF control programme.

Therefore the existing information of public about ASF in the mass media (TV, radio broadcast, print media) must be intensified. In the beginning, this has to be implemented by a short daily message.

#### **8.2.2 Information of the pig owners**

The cooperation of the animal owners with the veterinary service is of fundamental importance for the success of any disease control programme.

Experiences from various disease control programmes show that animal owners cooperate, when they are sufficiently informed about the clinics of the disease (disease awareness), about the way of infection and about possible preventive measures to protect their own animals. They have to know about the national control plan and they have to understand why the

severe disease control measures in the intermediate zones are necessary. This will contribute to the common understanding that the ASF control is for the benefit of the animal holders.

Therefore the mission team recommends that a special information programme for pig owners is elaborated. Trained local representatives have to distribute and explain the existing leaflet to the pig owners. Self explaining posters about ASF should be printed and posted at various places in the villages for instruction of the pig owners. We recommend the support of a communication expert for this issue.

## **9. Compensation**

### **9.1 Appreciation of the situation**

Given the situation for a lot of the Georgian pig owners, the economic benefit of their pig production (selling of piglets, access to pork meat and products) is of considerable importance for the rural livelihood. Therefore, the question of compensation must be solved for the implementation of a consistent disease control programme.

The cooperation of the animal owners with the veterinary service is of fundamental importance for the success of adequate disease control measures. This cooperation can only be achieved, when a certain compensation fund of culled and dead pigs is established.

The reporting and sampling of dead pigs and the correct carcass disposal will be promoted through the compensation of dead pigs. This is very important for ASF prevention measures as it is extremely likely that free roaming pigs and wild boar have contact with dead or infected pigs.

However, the pig owners must understand, that ASF can only be defeated, if a confinement of pigs is implemented. The prohibition on free roaming pigs is inevitable for prevention of entering in an endemic phase of the virus in the country or of a possible re-infection of ASF in the future.

### **9.2 Recommendations regarding compensation**

Given the situation, the mission team strongly recommends a compensation fund to be established:

- Compensation is only paid in areas where a comprehensive and complete control program is implemented. Therefore, compensation is only paid in free and intermediate zones.
- Free roaming pigs have to be culled by the “disease control teams” and correctly disposed without any compensation for the owners.
- Compensation of culled pigs (clinically healthy or sick) is paid, if the owner can proof that his pig has been kept in an adequate confinement.
- There are two possibilities of compensation - compensation in cash or compensation through restocking of animals. With regard to the rural situation in Georgia, we recommend the compensation of culled or reported dead pig with a “restocking-piglet” after an animal-free period. The piglet can be produced in one of the ASF free zone by a Georgian farmer (breeding stations to be established).

### **9.3 Restocking of pig population**

Compensating culled pigs with restocking-piglets has several advantages:

- Compensation through restocking with piglets is less cost intensive than compensation of adult pigs in cash.
- Although a nationwide registration of pigs would be preferable (long term improvement of bio-security in pig production - see annex 10), it is not absolutely necessary for the immediate measures regarding ASF. A system can be implemented where the pig owner gets a voucher for each dead or culled pig which was kept in confinement (with positive

laboratory result). That allows him to obtain a new “restocking- piglet” after an animal-free period.

- Restocking of the district after a period of at least 40 days without any findings of ASF infected animals – when it has been declared as “free zone” can be controlled by veterinary service.
- The resources for compensation are reinvested in Georgian agriculture and national pig production does not disappear.
- The resources for compensation are dispersed over time, because the disease control measures are concentrated to the intermediate zone.

## **10. Waste management**

### **10.1 Domestic waste management**

Most commonly, domestic waste (including food waste) is disposed by local landfill. These areas are not confined and free roaming animals, including pigs, have access.

### **10.2 Waste of incoming ships**

In Poti Harbour there is no organized collection of waste. Either the waste (including food left over) is collected and transported to the public landfill of Poti or it is thrown over board.

Free roaming pigs have access to waste (including food waste) at the beach or at the local dump of Poti.

### **10.3 Recommendations**

The expert team recommend the following improvement of waste management:

- Waste from ships must be collected and correctly eliminated (incinerated, buried or disposal in fenced landfill).
- The free access from free roaming pigs to waste must be prevented.

## **11. Potential vector competence of ticks**

There is only little recent knowledge about the presence of a potential competent tick vector to transmit ASF in Georgia. The mission team was told by Dr. Gugushvili (Institute of Parasitology, Tbilisi) that different soft ticks of the genus *Ornithodoros* are present in Georgia (*O. verrucosus*, *O. alactagalis*, *O. lahorensis*). These soft ticks are capable of transmitting the virus. Their habitat is mainly East Georgia due to the climate conditions. No ticks were tested for ASF until now. This will be a very important issue for further investigations in order to demonstrate freedom of disease in the free zones.

## 12. International reporting

As a member state of the World Organisation for Animal Health (OIE), Georgia must send weekly disease reports of the ASF outbreak to the OIE until Georgia is internationally declared free from ASF. These reports must be comprehensive and complete, and among others must provide the following information:

- Information about the control measures applied
- Name and number of affected villages
- Number of susceptible animals per village
- Number of cases per village
- Number of deaths per village
- Number of destroyed animals per village
- Number of slaughtered animals per village

Each report only must state cases that occurred in the period since the previous report.

Since ASF is a highly contagious disease, all susceptible animals should be destroyed according to international standards. Under current circumstances, this standard cannot be achieved in Georgia. This should clearly be stated, and it must be stated how this situation is dealt with.

### **13. Long term improvement of biosecurity in pig production**

In parallel to the control of ASF, the expert team strongly recommends that Georgia improves its pig production as a long term process. This includes:

- Confinement of pigs
- Prohibition of free roaming pigs
- Minimal bio-security standard in animal holdings (annex 10)
- Animal registration
- Waste management without access of any livestock
- Promotion of livestock feed industry
- Promotion of local slaughterhouses with adequate waste disposal

This is a long term process that will take time. It not only will improve the situation regarding ASF, but also CSF, FMD and other important animal diseases.

## 14. Annex (A 1-11)

### A1 Plan of activities against ASF (by Ministry of Agriculture, Georgia)

The Ministry of Agriculture has formulated an plan of activities for the control of African Swine Fever.

#	Type of Activities	Performance period	Structure in charge of performance	Person in charge of performance
1	2	3	4	5
1	Special governmental commission should be formed for liquidating the African Swine Virus	In 24 hours	Cabinet of Ministers	Z. Nogaideli
2	All the towns, districts, settlements, where massive death of pigs took place, shall be declared as outbreak sites	In 24 hours	Governance bodies of the region, town, district, Veterinary Surveillance Department	
3	Territories located 10-15 km away from the outbreak sites shall be regarded as dangerous points of disease, where all the pig population shall be slaughtered with bloodless method.	In 24 hours	Governance bodies of the region, town, district, Veterinary Surveillance Department	
4	The territories located 100-150 km from the epizootic sites shall be declared as dangerous zones of disease	In 24 hours	Governance bodies of the region, town, district, Veterinary Surveillance Department	

#	Type of Activities	Performance period	Structure in charge of performance	Person in charge of performance
5	A quarantine shall be announced in epizooties outbreak sites, at the dangerous zones under the threat of infection (10-15 km from the outbreak site), and containment activities in the zones of threat of disease spreading (100-150 km) shall take place	Immediately	Local governance bodies, national service	
6	Neighbor countries shall be informed about the disease in accordance with the Office of International Epizooties	Immediately	Department of veterinary surveillance	
7	Special veterinary-quarantine groups shall be created with the purpose of strengthening the control on performance of the requirements of quarantine rules, and veterinary-police watch-points shall be created		Local governance bodies, police	
8	Sufficient number of transportation, disinfection and other material-technical recourses shall be mobilized for taking effective quarantine-protection measures		Local governance bodies, national service	

#	Type of Activities	Performance period	Structure in charge of performance	Person in charge of performance
9	Movement of all species of livestock (including birds), processing-movement of raw materials and production from the area, arrangement of markets and exhibitions of live animals and other activities that would cause gathering of animals, and taking animal food from the area shall be strongly prohibited in the epizootic sites	Systematically	District, city divisions, police, Local governance bodies	
10	Wild animals, rodents and roaming animals shall be killed at the outbreak sites	Systematically	Specially formed brigades, hunters union. Ministry of environment protection and natural resources	
11	Population and farmers should be informed by mass media about the threat of African Swine Virus and preventive measures as well.	Systematically	Television, press, radio	
12	Material-technical and special work-groups shall be created that shall ensure implementation of activities with disinfection equipment and appliances, and bury killed animals by observing veterinary rules.			

#	Type of Activities	Performance period	Structure in charge of performance	Person in charge of performance
13	Reasoning from the specifics, by agreeing it with the Ministry of Environment Protection and Natural Resources, special burial territories shall be identified in the outbreak sites, where the carcasses shall be buried			
14	Triple disinfection shall be done according to the instruction: 1 – after killing animals; 2 – after removing floors, internal walls, feeding places of the sheds and after thorough mechanical cleaning; 3 – before removal of quarantine.			
15	Pork meat of slaughtered pigs in the dangerous points of disease shall be used for making boiled or smoked sausages or shall be consumed after boiling.		Structures of national service, police, bodies of local governance.	

## A2 Laboratory

From the start of the outbreak until 3 July, the central laboratory in Tbilisi (LMA) collected and tested 56 samples. It is not known how many different animals were tested. Samples were collected from 7 different locations throughout the country (see map annex 5.4). Samples are collected by mobile veterinary teams that are stationed in so called sentinel laboratories (basic equipment, only for sample collection, no diagnostic facility). Throughout the country there are eight sentinel laboratories. The mobile teams consist of around 6 people each, including veterinarians that are capable of collecting samples from living animals.

The laboratory also has access to a disease investigation form (TADR investigation form), that can be used to collect information on the household, clinical signs, as well as some information for tracing backward and forward (see also annex 6). It is not known whether this form is consequently filled out for each animal that is sampled, but the forms are available in the sentinel stations.

The results of the tests are stored in a database, but the results are not routinely shared with the MoA, the Crisis Centre, or the National Service of FSVPP. It is not known whether the results of the disease investigation form are stored in the same database, and they are not shared with other governmental institutions either.

There are only a few tests conducted in the regional laboratory in Kutaisi (equal methods as in Tbilisi), and the positive samples were sent to the laboratory in Tbilisi. Kutaisi laboratory as well as the Tbilisi laboratory are equipped according to international standards.

The samples are tested by PCR and by ELISA. PCR Protocol as well as Primers and Probe are used according to the publication of L. Zsak et al. (Journal of clinical microbiology, Jan. 2005, p. 112-119). For DNA extraction the DNeasy kit (QIAGEN) is used for blood and tissue samples.

As for the ELISA, two commercial kits from INGENASA are used, it is a capture ELISA for antigen detection and a blocking ELISA for antibody detection.

The results of the diagnostic tests are presented in table 1. 25 of 56 PCR tests were positive. 9 of 31 ELISA tests were positive, 21 ELISA tests were negative and 1 ELISA could not be tested due to low sample quality.

Table 1. Diagnostic results (Courtesy of Mrs. Tinatin Onashvili, Chief of Laboratory (LMA))

Date	District (village)	Number of samples	PCR results	ELISA results
24 May 2007	Ckaltubo	7	7 positive	-
8 June 2007	Gurjaani	10	10 positive	-
9 June 2007	Kvareli (village Eniseli)	3	3 positive	-
12 June 2007	Tbilisi (village Gldani)	1	1 negative	-
19 June 2007	Tbilisi (village Gldani)	1	1 positive	-
20 June 2007	Kakheti (village Dedoplistskaro)	10	10 negative	9 positive 1 negative

<b>Date</b>	<b>District (village)</b>	<b>Number of samples</b>	<b>PCR results</b>	<b>ELISA results</b>
22 June 2007	Tblisi (village Vashijvari)	1	1 positive	-
22 June 2007	Samçkhe Javakheti (village Sakuneti)	6	6 negative	6 negative
22 June 2007	Samçkhe Javakheti (village Tkemlana)	13	11 negative 2 positive	12 negative 1 cannot be tested
25 June 2007	Tblisi (village Vashijvari)	2	2 negative	-
3 July 2007	Tblisi (village Vashijvari)	2	1 positive 1 negative	2 negative

## **A3 Epidemiological report on ASF outbreak in Georgia**

### **A3.1 Current situation**

#### **A3.1.1 Development of the outbreak**

The outbreak of ASF started on 22 April 2007 around the harbour city of Poti, although already in the beginning of April increased mortality of pigs was reported in Poti. The current most likely hypothesis of introduction of the virus is via importation of contaminated pork or pork waste from international ships. However, it will be very difficult, or even impossible, to definitively prove this hypothesis, due to the long time between the beginning of the outbreak and its official recognition, as well as due to the lack of documentation.

Starting from 22 April, data were collected on the number of dead pigs in each districts. These numbers were used to follow the course of the outbreak. No laboratory diagnosis was conducted during this period. The ASF outbreak was officially confirmed on 4 June. On 6 June, the outbreak was considered to have spread to 48 districts (annex 5.1).

Starting from 7 June, the crisis centre (see also section below) collects daily information about the number of dead pigs in the districts. In annex 5.2, the course of the outbreak following the first week after confirmation is presented in maps.

In annex 5.3, all districts are presented that have reported dead pigs until 9 July.

As of 9 July, in 56 of 61 districts dead pigs were reported. The distribution of reported dead pigs on 9 July is shown in annex 5.4. Also in annex 5.4, an overview is given from which regions samples were collected.

#### **A3.1.2 Crisis centre**

The Ministry of Agriculture (MoA) installed a hotline and crisis centre on 7 June, after the official confirmation of the ASF outbreak by the OIE reference laboratory in Pirbright. This centre is located within the MoA. Before 7 June, information about outbreaks was collected in the Veterinary Supervision Department of the National Service of FSVPP.

Three telephone hotlines were installed where district officers, veterinarians and other people can report sick and dead pigs, however according to the staff of the crisis centre this rarely occurs. The staff of the crisis centre contacts the veterinary headquarters in each district three times per day for updated information regarding the number of dead pigs and the number of pigs that were killed by the hunter teams. These hunter teams in the districts are responsible for killing free roaming and sick pigs in the villages. Daily reports are produced by the crisis centre stating the following four parameters: number of dead pigs, cumulative number of dead pigs since the beginning of the outbreak, number of pigs killed by hunter teams, cumulative number of pigs killed by hunter teams. Data are collected by district, the names of the villages are included whenever this information is available. Daily reports are made to the Minister and Deputy Minister of Agriculture. The new outbreaks are also indicated on a map of Georgia, which provides a quick overview of the spread of disease over the country.

In the early days of the crisis centre, information was collected from the veterinary district headquarters about the estimated numbers of pigs in each village. Based on this information and the cumulative number of dead pigs, mortality rates are calculated on a daily basis.

Otherwise, no epidemiological data are collected about the outbreaks.

In the crisis centre, the data are stored in an Excel database. For each day a new worksheet is used. The columns in the database include the following information: district (with names of villages and the number of dead pigs per village in brackets whenever available), number of dead pigs, cumulative number of dead pigs since the beginning of the outbreak, number of pigs killed by hunter teams, cumulative number of pigs killed by hunter teams.

The reports of outbreaks are based on clinical signs only. In almost all cases there is no laboratory diagnosis to confirm the presence of the virus, and no samples are routinely collected from dead pigs for subsequent testing. The crisis centre does not use a threshold level of a minimum number of dead pigs; a certain degree of over-estimating the extent of the outbreak can therefore not be excluded. Simultaneously however, a certain degree of under-estimating cannot be excluded either, because pigs that die away from villages may not be reported at all.

### **A3.1.3 Conclusions of the current epidemiological reporting system**

The information that is available in the crisis centre does not allow to draw any conclusions about origin or further spread of the virus. Since the reporting system is only based on clinical symptoms, it is possible that villages are falsely declared ASF-infected. This may specifically be the case in villages where only very few dead pigs are reported.

The epidemiological data that are collected by the laboratory (see annex 2) are strongly focused on clinical signs and on a description of the animals that are sampled. Little information is gathered that would allow tracing backward and forward, and no information is collected regarding movement of people or equipment. This TADR investigation form was not developed specifically for ASF disease investigation in Georgia, but it is a universal form that can be applied for different contagious diseases and in different countries.

Information about newly reported outbreaks (based on clinical signs) is not shared with the laboratory to confirm the new outbreak with a laboratory result. Neither are laboratory results shared with the crisis centre to confirm reports of clinically affected pigs.

The Excel database in the crisis centre is likely to reach the limits of its capacities, when the Excel program does not allow to insert more worksheets. As well, the Excel database collects the information on a district level, rather than on a village level. This approach facilitates a quick overview of infected districts, but at the same time complicates any epidemiological disease investigation, as these investigations would be conducted on a village or household level.

## **A4 Recommendations for improvement of the epidemiological reporting system**

Information about possible routes of introduction and possible routes of further spread are very important for the control and ultimate eradication of ASF in Georgia. This information will allow to focus available resources on the control of households, villages, or districts that are most likely to be infected. Therefore, we propose to improve the current epidemiological reporting system and data management system.

Pig husbandry in Georgia is based on free roaming pigs. Although confinement of pigs is desirable from a disease control perspective, currently this housing system is not widely applied. In a free roaming system, pigs from different households have direct contact to each other, and therefore it does not seem very practical to consider a single household as a single epidemiological unit. According to international definition, an epidemiological unit is a group of animals with a defined epidemiological relationship that share approximately the same likelihood of exposure to a pathogen. Given the Georgian pig husbandry circumstances, we therefore propose to consider a village as an epidemiological unit.

Georgia can be divided in three different disease control areas: free zones, intermediate zones and infected zones (see chapter 7). The demand for epidemiological information following an outbreak differs between these zones. The highest level of epidemiological information following an outbreak is required for free zones, where virus is supposed to be absent. The lowest level of epidemiological information following an outbreak is required for infected zones, where virus is assumed to be present.

### ***A4.1 Disease investigation form***

When a clinical suspect case is reported in a free zone, immediate steps must be undertaken to identify through which routes the virus may have been introduced and through which routes the virus may have spread further, in order to avoid further spread to other villages.

In an intermediate zone ASF outbreaks can still occur, but an active control program is applied to eradicate the virus. Therefore, epidemiological information about each outbreak in these intermediate zones can support the control efforts by identifying sources of infection that must be removed from these zones.

The lowest demand for epidemiological information exists in the infected zones, where no significant control efforts are undertaken, but the impact of the disease should be reduced to the extent possible with limited resources. However, information about clinical signs can help to understand whether the virus is changing its characteristics.

We propose a newly developed disease investigation form (see annex 7), that can be used in addition to the existing TADR investigation form. The disease investigation form can be used in the free and intermediate zones, together with the TADR investigation form. In the infected zones only the TADR investigation form should be used.

### ***A4.2 Sections of the disease investigation form***

#### **A4.2.1 Identification**

This section identifies the owner of the dead/sick pigs, as well as the investigator. Also the date of investigation is included.

#### **A4.2.2 Information on household**

This section identifies whether any non-household members are working in the household. These people may have been either a source of introduction of the virus into the household when they own or are in contact with infected pigs outside the household, or may have been a source of further spread when they carried the virus outside the household with their clothes or equipment. This section also investigates whether pigs have access to kitchen or slaughter waste, as contaminated waste may act as a source of infection.

#### **A4.2.3 Information on the holding**

This section identifies the number of susceptible animals in the household, as well as any animals that may contribute to spread of infection.

#### **A4.2.4 Information on the housing of the pigs**

This section identifies whether pigs on the household have any direct contact to pigs from other households or wild boar. These may have acted as a source of infection, or may have become infected by the pigs from the affected household.

#### **A4.2.5 Information on the outbreak**

This section explores the number of pigs on the household affected by the outbreak, and identifies what was done with the infected pigs. Proper burial of infected pigs removes the virus from the environment, and thus contributes to an early containment of the outbreak.

#### **A4.2.6 Information on entries**

This section explores various routes through which the virus may have been introduced into the household. Each possible route of introduction should subsequently be investigated in-depth.

#### **A4.2.7 Information on exits**

This section explores various routes through which the virus may already have spread from the infected household to other households. Each possible route of spread should subsequently be investigated in-depth in order to detect every new infected household early.

### ***A4.3 Collection of epidemiological information***

The disease investigation form should be completed on the household premise as soon as possible following the first report of clinical signs. Therefore, it seems appropriate that this work is conducted by district or local veterinarians. However, this work could also be conducted by other staff after appropriate training.

After completion of the disease investigation form, the form should be sent to the crisis centre in the MoA. Preferably, the form should be sent by fax, or the completed form can be sent by email, as there are the fastest ways of sending information. Alternatively, information could be transmitted by telephone, and the form could subsequently be sent to the crisis centre by regular mail or car at the earliest convenience. Copies of the disease investigation forms should be retained in the district veterinary headquarters.

Together with sample collection in the affected household, the TADR investigation form should be filled out. This form should be sent together with the samples to the laboratory that will conduct the diagnostic analysis.

#### ***A4.4 Data management of epidemiological data***

Similar to the reports of dead pigs, the epidemiological data that are collected in the affected households should be stored in an Excel database, or another database system. For the purpose of analysis, all information that is obtained from one household should be included in a single row. There is no need to use different Excel worksheets for different dates.

Also, we propose to restructure the existing Excel database to record the number of dead and killed pigs. The information in this database can be structured by village, which will allow a quick overview of the development of the outbreak in each village, in each district and in each region.

In annex 8 examples of these Excel databases are presented.

Data entry should be conducted as soon as possible after receiving of the completed disease investigation form. Subsequently, the data can be analysed to identify possible routes of virus introduction and spread of virus.

Simultaneously, the laboratory should diagnose the samples and share the results with the crisis centre as soon as they are available. The diagnostic results should be included in the same Excel database as the epidemiological data. With this approach, a complete overview of each affected household is obtained. The results of the laboratory analysis and the data analysis should be shared with the National Services for FSVPP to ensure that they can take the appropriate actions in the affected household.

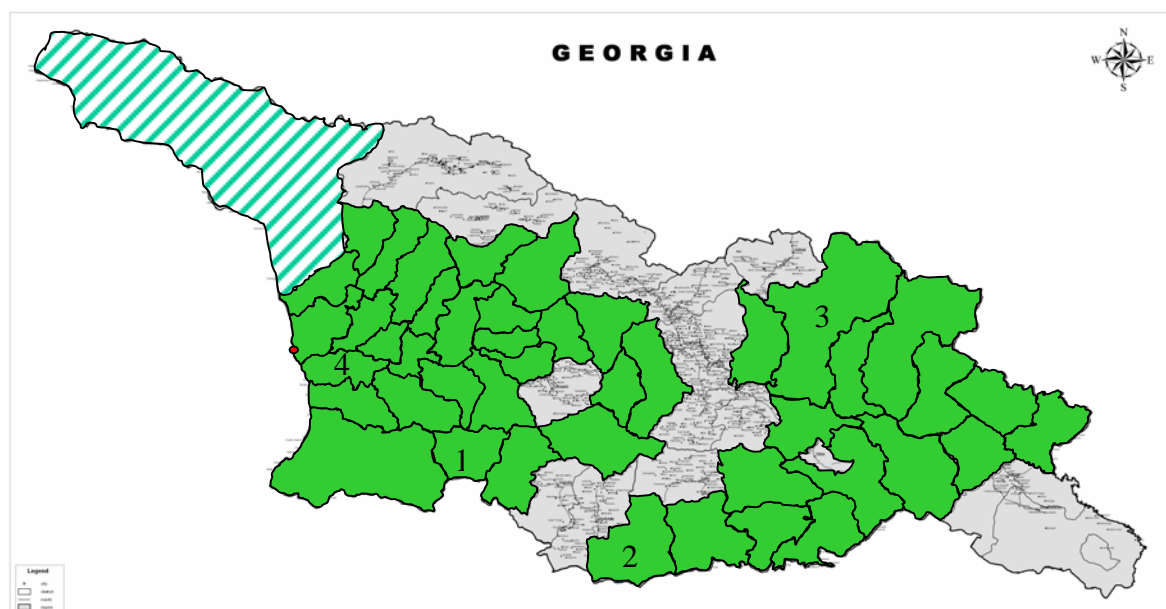
#### ***A4.5 Summary of recommendations***




- In the free zone and intermediate zone: completion of the disease investigation form and the TADR investigation form for each household with clinical suspect cases or dead pigs.
- In free zone and intermediate zone: collection of samples from each pigs with clinical signs consistent with ASF and from all dead pigs.
- In the infected zone: completion of the TADR investigation form when samples are collected from clinically sick and dead pigs.
- Data management of epidemiological data and reports of dead and killed pigs in a comprehensive database (e.g. in Excel).
- Inclusion of the laboratory results in the epidemiological database of the crisis centre.
- Continuous data analysis from epidemiological reports.
- Communication with disease control unit about most likely routes of spread of the virus.

## A5 Maps of ASF outbreak – spread of virus over time

### A5.1 Overview of districts where dead pigs had been reported between 22 April and 6 June

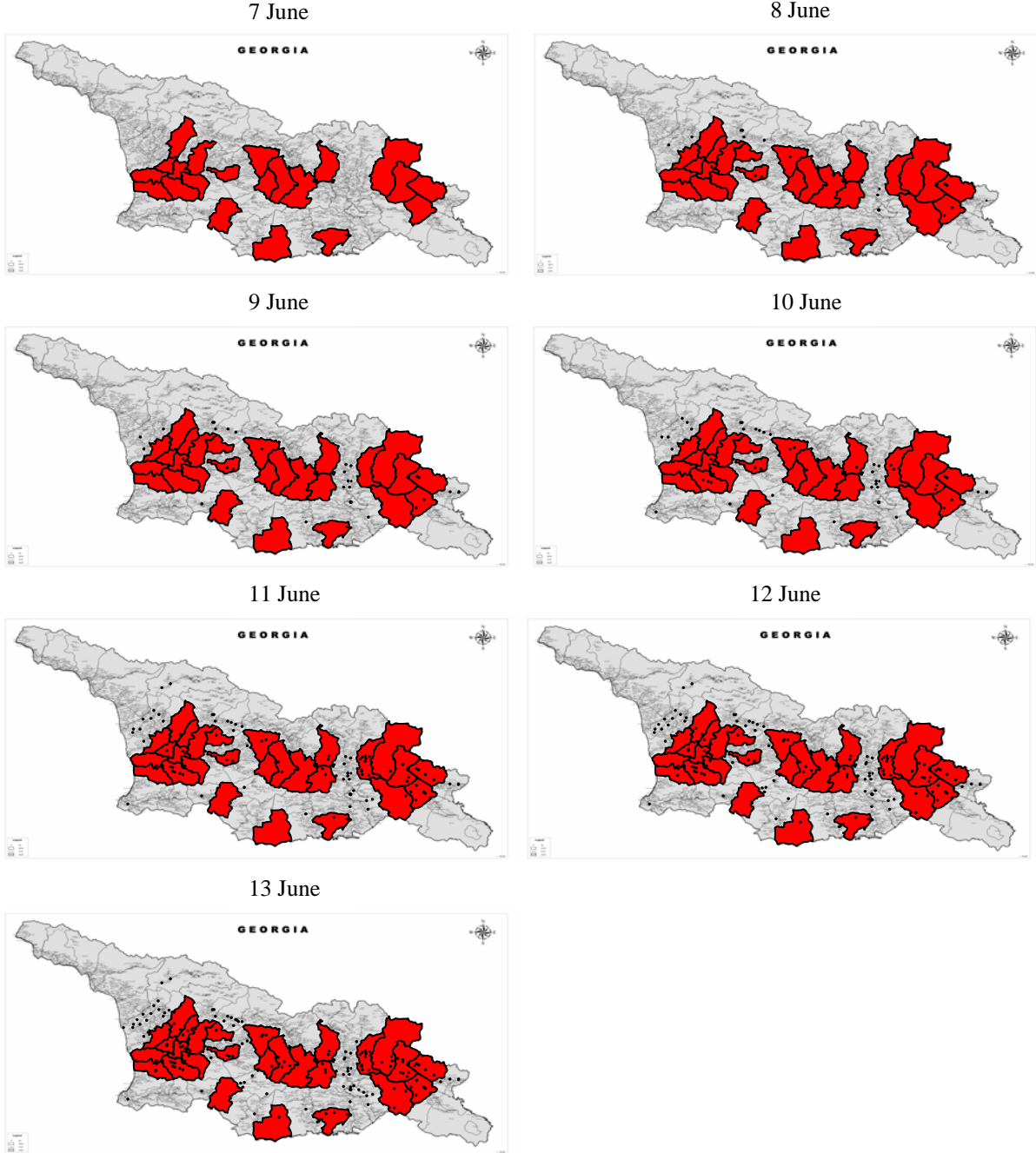
From 22 April till 6 June, data on the number of dead pigs were collected from the districts. Data were not recorded on a daily base, but rather collated for a few days or a week. Also, no data were collected from individual villages, but only from districts. No sampling was conducted to confirm the diagnosis, and the official confirmation of the ASF outbreak was only made on 4 June. Between 22 April and 6 June, dead pigs were reported in 48 out of 61 districts, and all these 48 districts were considered to be infected. However, it must be noted that the cumulative number of reported dead pigs ranged from 1 (in the districts Adigeni and Ninotsminda in the southern part) to 3050 (in the district Dusheti in the eastern part) and 3345 (in the district Lanchkuti in the western part). No data were available from the autonomic region of Abchazia and only limited data were available from the region of South Ossetia, in the central northern part of Georgia.



-  Districts where dead pigs were reported
-  No data (Autonomic region Abchazia)
-  Poti, the most likely place of introduction of the virus
- 1, 2, 3, 4      Adigeni, Ninotsminda, Dusheti, Lanchkuti respectively

**A5.2 Overview of the course of the outbreak based on reports of dead pigs from 7-13 June**

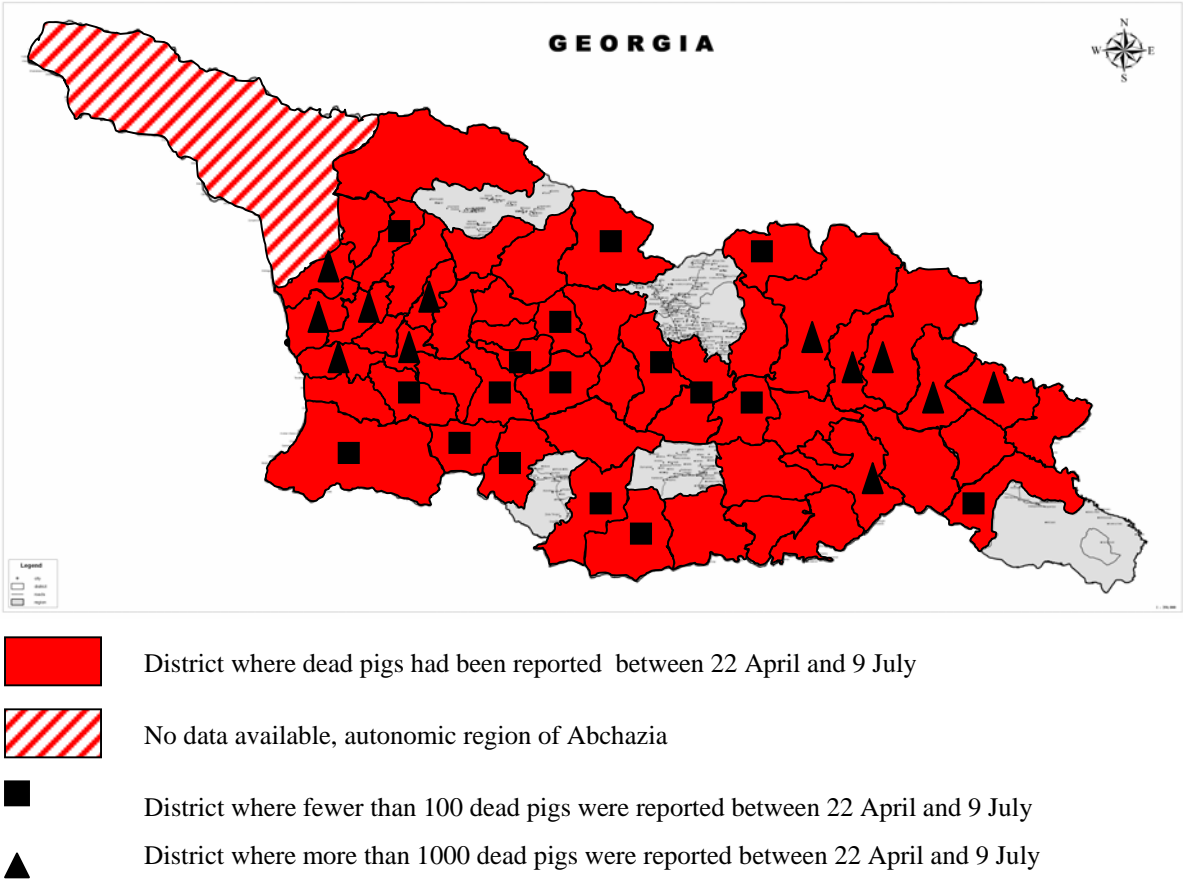
Since 7 June, daily information is collected from the districts on the number of dead pigs. Some districts specified the information per village, in other districts information is only available on a district level. During the first week, the reporting on a village level improved significantly.



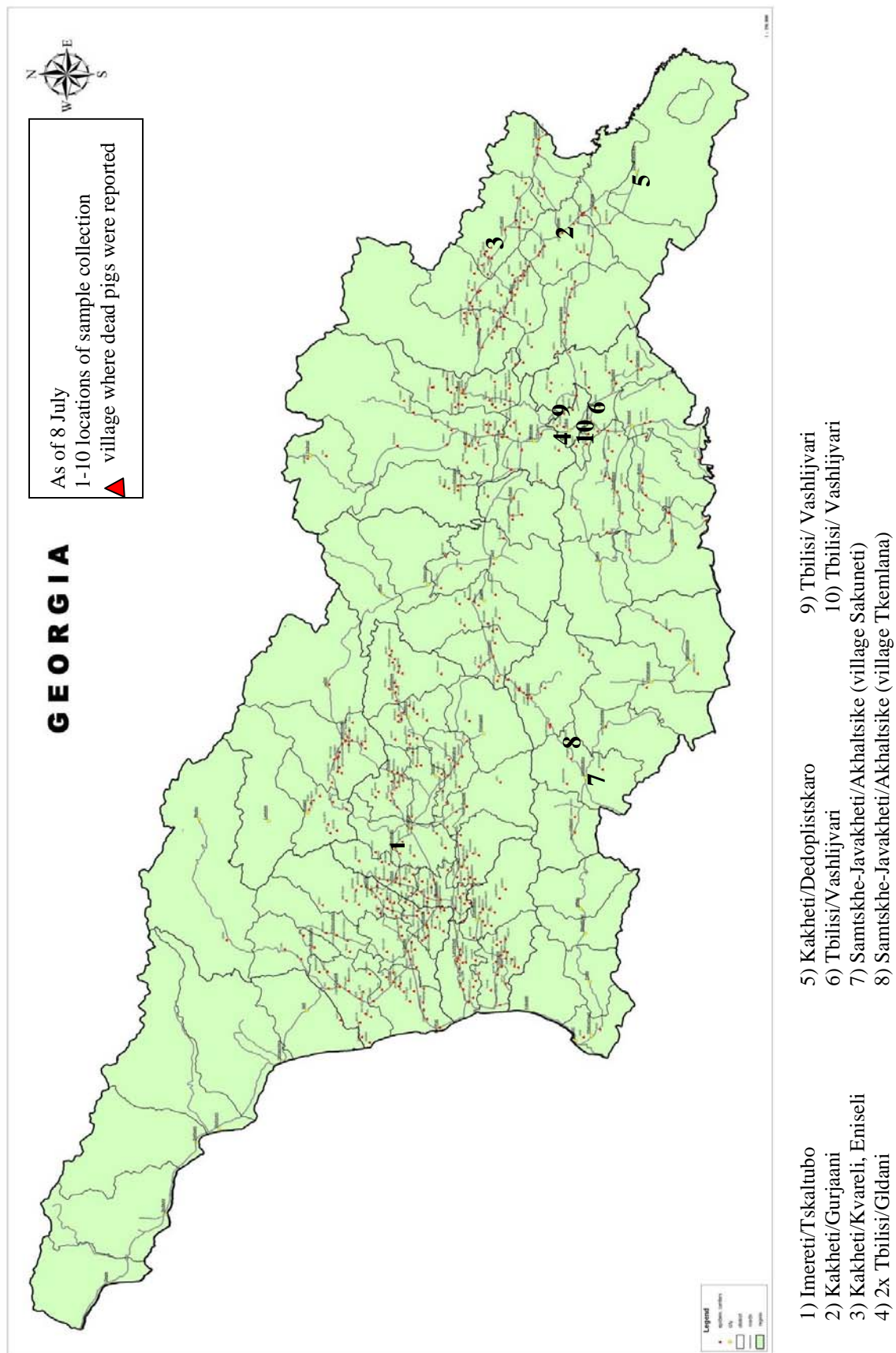
- Districts that reported dead pigs but did not specify which villages
- Villages where dead pigs were reported

### A5.3 Overview of districts that have reported dead pigs until 9 July

On 9 July, dead pigs had been reported in 56 from 61 districts. No data were available from the autonomic region Abchazia, and limited information was available from South Ossetia. In 17 districts, fewer than 100 dead pigs had been reported. More detailed analysis, including laboratory diagnosis, should be conducted in these districts to determine whether these outbreaks are currently starting, whether the outbreaks are currently ending, or whether these districts were falsely declared infected. On the other end, some districts reported large numbers of dead pigs. In 12 districts, more than 1000 dead pigs had been reported.



### A5.4 Overview of outbreaks based on clinical signs as of 9 July, and location of sample collection



## A6 TADR investigation form

TADR investigation form, available in English and Georgian from the laboratory in Tblisi, Kutaisi and the sentinel stations.

Case ID# \_\_\_\_\_ Field Accession ID \_\_\_\_\_

**TADR Investigation Form for Livestock Diseases<sup>1</sup>**

Date (day/month/year): \_\_\_\_\_ Name of Investigator<sup>2</sup> #: \_\_\_\_\_

**Demographics**

Farm code or ID#: _____		Zone/Region: _____	
Farm name: _____		District: _____	
Name of owner or farm manager: _____		Village: _____	
Telephone: _____ Fax: _____		Address: _____	
Email: _____			
Geo Location: Long _____	Lat _____		

**Herd/Flock Details**

	Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of Animals	Number of Sick Animals		Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of Animals	Number of Sick Animals
Cattle (include breed)				Buffaloes			
Sheep				Other, camels, horses, donkeys, birds (specify species)			
Goats							
Pigs							

<b>Ownership Structure</b>	<b>Production System</b>	<b>Movement Pattern</b>	<b>Grazing Pattern</b>
Private <input type="checkbox"/>	Dairy <input type="checkbox"/>	Settled <input type="checkbox"/>	Common <sup>3</sup> <input type="checkbox"/>
Government <input type="checkbox"/>	Meat <input type="checkbox"/>	Nomadic <input type="checkbox"/>	Enclosed <sup>4</sup> <input type="checkbox"/>
Collective <input type="checkbox"/>	Dual Purpose <input type="checkbox"/>	Trader <input type="checkbox"/>	Zero <sup>5</sup> <input type="checkbox"/>

**Clinical Investigation**  
(if several species are affected complete the following sections for each species)

Species<sup>17</sup> \_\_\_\_\_ Date the signs started \_\_\_\_\_

	Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of animals sick	Number affected- details	Number affected
Off feed			Tongue lesions	Yes <input type="checkbox"/> No <input type="checkbox"/>
Fever <sup>6</sup>			Skin lesions	Yes <input type="checkbox"/> No <input type="checkbox"/>
Lameness			Nervous signs	Yes <input type="checkbox"/> No <input type="checkbox"/>
Reduced milk yield			Diarrhea	Yes <input type="checkbox"/> No <input type="checkbox"/>
Dyspnoea			Abortions	Yes <input type="checkbox"/> No <input type="checkbox"/>
Nasal discharge			Swollen joints	Yes <input type="checkbox"/> No <input type="checkbox"/>
Ocular discharge			Epididymitis	Yes <input type="checkbox"/> No <input type="checkbox"/>
Salivation			Age range of sick animals <sup>8</sup>	
Stomatitis			Deaths	Yes <input type="checkbox"/> No <input type="checkbox"/>
Others <sup>7</sup> (specify) _____			Age range of dead animals <sup>8</sup>	

**Epidemiological Information**

Has the farmer seen or heard of this disease before?	Yes <input type="checkbox"/> No <input type="checkbox"/>	When? <sup>9</sup> _____	
Date of last vaccination		Where? <sup>10</sup> _____	
Details (type, manufacturer, lot number)		Number vacc _____	
How many animals (cattle/buffaloes/sheep/goats/pigs) have been introduced into the herd /village during the last 12 months?		Place of origin _____	
How many cattle/buffaloes/sheep/pigs have left the herd during the last 12 months		Place of destination _____	
Are milk or milk products sold	Yes <input type="checkbox"/> No <input type="checkbox"/>	Destination: _____	
Are meat or meat products sold	Yes <input type="checkbox"/> No <input type="checkbox"/>	Destination: _____	



## A7 Disease investigation form for African Swine Fever in Georgia

TO BE FILLED OUT IN FREE ZONES AND INTERMEDIATE ZONES ONLY - ON HOLDINGS WHERE SUDDEN PIG DEATH OR CLINICALLY SICK PIGS OCCURED

### 1. Identification

1.1 Name of owner: _____	1.5 Name of investigator: _____
1.2 Adress, village: _____	1.6 Contact details: _____
1.3 District, region: _____	
1.4 Phone number: _____	1.7 Date of investigation: _____

### 2. Information on household

2.1 Are any people other than household members working on the premise? <input type="checkbox"/> No <input type="checkbox"/> Yes   Name and location: _____ Name and location: _____
2.2 What is done with kitchen waste from the household?
2.3 Is kitchen waste fed to pigs? <input type="checkbox"/> No <input type="checkbox"/> Yes
2.4 What is done with slaughter waste?
2.5 Is slaughter waste fed to pigs? <input type="checkbox"/> No <input type="checkbox"/> Yes

### 3. Information on the holding

3.1 Number of pigs owned on the day before the clinical symptoms started: _____
3.2 Number of dogs owned: _____
3.3 Number of cats owned: _____
3.4 Are any other animals owned? <input type="checkbox"/> No <input type="checkbox"/> Yes   Species: _____ Number: _____ Species: _____ Number: _____ Species: _____ Number: _____

### 4. Information on the housing of the pigs

4.1 Were pigs confined 24 hours per day during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes
4.2 If no, were pigs enclosed at home at night during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes
4.3 Are wild boars or wild pigs present in the area around the village? <input type="checkbox"/> No <input type="checkbox"/> Yes
4.4 Where does the drinking water for the pigs come from? <input type="checkbox"/> Own well <input type="checkbox"/> open water stream <input type="checkbox"/> lake <input type="checkbox"/> Other, specify: _____

### 5. Information on the outbreak

5.1 Date of first clinical signs: _____
5.2 Number of dead pigs since the start of the clinical signs: _____
5.3 Number of sick pigs, but that are still alive: _____
5.4 How many pigs have been slaughtered during the last 3 weeks?

5.5 How many pigs have been slaughtered since the beginning of clinical signs? \_\_\_\_\_  
 5.6 What was done with the dead pigs? \_\_\_\_\_

**6. Information on entries**

6.1 Were any live pigs brought in during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, how many from within the village? _____ If yes, how many from outside the village? _____	Name, location: _____ Name, location: _____ Name, location: _____
6.2 Were any live other animals brought in during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, how many from within the village? _____ If yes, how many from outside the village? _____	Name, location: _____ Name, location: _____ Name, location: _____
6.3 Was any meat containing pork bought during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes From within the village: <input type="checkbox"/> From outside the village: <input type="checkbox"/>	Name, location: _____ Name, location: _____ Name, location: _____
6.4 Was any equipment brought on the holding during the last 3 weeks (tools, cars, carts, boots, etc)? <input type="checkbox"/> No <input type="checkbox"/> Yes From within the village: <input type="checkbox"/> From outside the village: <input type="checkbox"/>	Name, location: _____ Name, location: _____ Name, location: _____
6.5 Were there any visitors from outside the village during the last 3 weeks (veterinarians, medical doctors, family members, traders, etc)? <input type="checkbox"/> No <input type="checkbox"/> Yes Name, location: _____ Name, location: _____ Name, location: _____	

**7. Information on exits**

7.1 Were any live pigs sold during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, how many were sold within the village? _____ If yes, how many were sold outside the village? _____	Name, location: _____ Name, location: _____ Name, location: _____
7.2 Were any other live animals sold during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, how many were sold within the village? _____ If yes, how many were sold outside the village? _____	Name, location: _____ Name, location: _____ Name, location: _____
7.3 Was any meat containing pork sold during the last 3 weeks? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, within the village? <input type="checkbox"/> If yes, outside the village? <input type="checkbox"/>	Name, location: _____ Name, location: _____ Name, location: _____
7.4 Was any equipment lent/given/shared with people outside the holding during the last 3 weeks (tools, cars, carts, boots, etc) <input type="checkbox"/> No <input type="checkbox"/> Yes	

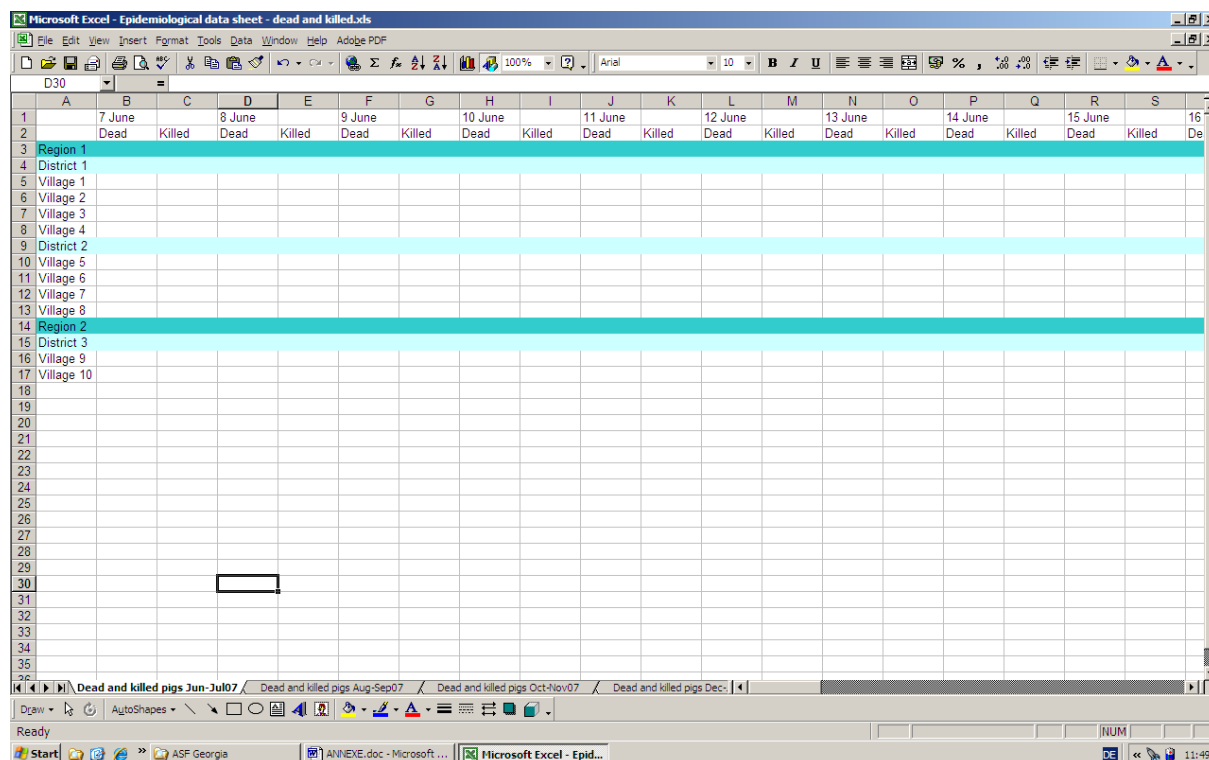
If yes, within the village?	<input type="checkbox"/>	
If yes, outside the village?	<input type="checkbox"/>	Name, location: _____
		Name, location: _____
		Name, location: _____
7.5 Did household family member visit anybody outside the village during the last 3 weeks?		
<input type="checkbox"/> No	<input type="checkbox"/> Yes	Name, location: _____
		Name, location: _____
		Name, location: _____

## A8 Epidemiological data management

### A8.1 Database for recording number of dead and killed pigs

The database consists of 1 row for each village in Georgia. Dates are contained in the columns, for each day there are 2 columns: dead pigs and killed pigs. Excel can automatically calculate the total number of dead and killed pigs per district and per region for each day. Each worksheet contains information for 2 months. In each worksheet, also the cumulative number of dead and killed pigs can be calculated for the entire 2 months period.

Graphs can be produced to show the course of the epidemic over time for each village, district and region. Also graphs can be produced to show the number of dead and killed pigs per district/region per day.



### A8.2 Database for disease investigation form

The database consists of 1 worksheet. The upper row consists of the different sections of the disease investigation form. The second row consists of the individual questions of the disease investigation form. Colours were added for facilitating the overview of the database. The third row currently indicates what type of data should be entered in each column.

For each suspect case in a household, one row is completed.

At the end of the data from the disease investigation form, columns are included for the information from the laboratory: were samples taken yes/no; date of sampling; name of the laboratory that conducted the diagnosis; date of the analysis; diagnostic result.



## A9 Sampling frame

For the ASF control program a structured sample collection and testing should be established. Here we propose a minimum sampling frame for intermediate zones, free zones in the early stage, and long-term free zones. For infected zones we do not propose a sampling frame. The sample sizes we propose are an optimisation of the scientific requirements for an ASF eradication program and the practical capacities available in Georgia.

		<b>Intermediate zone</b>	<b>Free zone, early stage</b>	<b>Free zone, long-term</b>
1	Dead pigs	Continuous testing in all villages	Testing in all villages	Continuous testing in all districts
2	Number of villages where samples should be taken	20 villages per district. When there are fewer than 20 villages in the district, in all villages samples should be taken	All villages in the district	6 villages per district
3	Number of pigs that should be sampled per village	10 pigs per village from different households. Sampling should be concentrated on pigs with clinical signs consistent with ASF	15 pigs per village from different households. Sampling should be concentrated on non-healthy pigs	15 pigs per village from different households. For convenience purposes, samples could be taken from slaughtered pigs
4	Sampling cycle for item 2 & 3	Every 3 weeks. The villages that are selected for sampling should be different for each sampling cycle	Once, at the moment the district is declared free of ASF	Every 3 months. The villages that are selected for sampling should be different for each sampling cycle
5	Total number of pigs sampled per sampling cycle (excluding continuous sampling of dead pigs)	200 pigs per district	15 pigs per village in the district	90 pigs per district
6	Type of diagnosis	Virus detection and antibody detection	Virus detection and antibody detection	Virus detection and antibody detection during first 6 months, afterwards only antibody detection
7	Contribution to control and eradication program	District is eligible for “free zone” status when no virus was detected in 2 consecutive sampling cycles	District is eligible for long term “free zone” status when no virus was detected	District remains “free zone” when no virus was detected

## **A10 Recommendations for minimal biosafety in a pig pen**

Following biosafety measures are to be respected:

- Use in the pig pen special clothing (overalls which can be washed at 70°C). Change overall weekly
- Change boots when entering the pig pen. Use these boots only in the pig pen and clean them twice weekly with soap and disinfect them monthly
- Wash your hands regularly with soap
- No access of foreign persons to the pig pen
- No access for other animals (dogs, cats ...) to the pig pen
- If pigs are held on a surface of concrete, wood ore other solid washable material, the pen has to be cleaned and disinfected twice per year
- Soil and ground can not be properly disinfected

Disinfection against ASF-virus has to be made in three steps:

1. pre-disinfection
2. cleaning
3. disinfection

The pre-disinfection is to prevent spreading of virus in the room. The following cleaning eliminates more then 90% of the present virus in the area. The remaining virus is destroyed during the following step of disinfection.

How to proceed:

1. pre-disinfection

Clean the surface with a broom, spray the disinfectant with a distance of approximately 50 cm on the surface and let the agent react for 30 minutes.

2. cleaning

brush the surface with water and soap and let it dry

3. disinfection

Spray the disinfectant on the surface and let it react during 2 hours

## **A11 ASF Mission AG ZOD Georgia, July 2<sup>nd</sup>, 2007 until July 13<sup>th</sup>, 2007- Agenda**

### ➤ MONDAY, JULY 2<sup>nd</sup>, 2007

10.00 -12.00 Meeting with Levan Orkoshneli (head of Food Safety, Animal Health and Plant Protection), Koba Dzamashvili (head of Department of Veterinary Service)

12.00 -14.00 Meeting with Derek Mueller (regional SDC director for the South Caucasus)

15.00-16.00 Meeting with Bakur Kverzereli 1<sup>st</sup> deputy Minister of Agriculture

16.00-17.00 Meeting at the National Crisis Centre, update about actual cases, measures, most important needs

### ➤ TUESDAY, JULY 3<sup>rd</sup>, 2007

10.00-11.00 Meeting with Mamuka Meskhi (FAO National Program Officer and Assistant Representative Georgia)

11.00-12.00 Meeting with Koba Dzamashvili (head of Department of Veterinary Service), update about actual measures and country situation, organisation of mission agenda

12.00-14.00 Discussion with Nukri Gugushvili (head of National Crisis Centre) about datamanagementsystem, data collection

15.00-16.00 Meeting with Lali Durmishidze (World Bank delegate), discussion about field excursions and disinfection station in the port of Poti

19.00-20.00 Conference call with FAO

### ➤ WEDNESDAY, JULY 4<sup>th</sup>, 2007

10.00-12.00 Work at the National Crisis Centre, inicial discussion about action plan and epidemiological databank

12.00-15.00 Meeting at the National Laboratory in Tbilisi with Tinatin Onashvili (chief of laboratory) and her deputy Cezar Machitidze

16.00-18.00 Work at the National Crisis Centre, drawing maps, start on epidemiological disease investigation form, start on map showing course of epidemic

### ➤ THURSDAY, JULY 5<sup>th</sup>, 2007

#### *Splitting of team*

7.30 2 mission members leave to Lanchkuti (village in West Georgia where the first cases occurred) and Poti harbour

11.00-14.00 Meeting with Lela Chakhvadze (head of Regional Veterinary Office Lanchkuti)

15 .00-15.30 Meeting with Zour Aburjanidze (head of Regional Veterinary Office Poti)

16.00-18.00 Meeting with Lali Durmishidze (World Bank delegate) and the Head of custom office at Poti harbour

2 mission members stay at T'bilisi, draft the action plan and proceed with the epidemiological investigation

10.00-11.00 Continue work in epidemiology and action plan

11.00-12.00 Meeting with C.J. Nutter (US embassy), discussion about US laboratory support program

13.00-14.00 Meeting with Nukri Gugushvili (head of National Crisis Centre), update about work progress

14.00-17.30 Continue work in epidemiology and action plan

### ➤ FRIDAY, JULY 6<sup>th</sup>, 2007

*Splitting of team*

11.30-13.00 Meeting with Nugzar Makhatadze (head of special mobile group Kutaisi) in the regional laboratory in K'ut'aisi

13.00-14.00 Meeting with Revaz Arveladze (head of Regional Veterinary Office Kutaisi)

10.00-16.00 Continue work in epidemiology and action plan

16.00-17.30 Meeting with Roland Geiger (representative of Bechtel company, subcontractor of US embassy for implementation for laboratory equipment)

➤ SATURDAY, JULY 7<sup>th</sup>, 2007

First draft of mission report and further work on the action plan

➤ MONDAY, JULY 9<sup>th</sup>, 2007

*Splitting of team*

11.00 Meeting with Avto Zardiashvili (District Veterinarian of Gurjaani) at the Deso-Barrier outside of Gurjaani

11.30-13.30 Meeting with Merab Ososhvili (Laboratory Director) at the Sentinel laboratory in Gurjaani

14.00-15.30 Visit of the village Mtsiziri (Kvareli district), meeting with Malkhazi Kalajishvili (head of village)

19.00-19.30 Meeting at the district headquarter of Gurjaani

2 mission members stay at T'bilisi and work on the draft mission report

15.00-18.00 Discussion with Nukri Gugushvili (head of National Crisis Centre) about our mission and presentation of draft report

➤ TUESDAY, JULY 10<sup>th</sup>, 2007

*Splitting of team*

2 mission members go to the boarder inspection control point in Sadakhlo at the frontier to Armenia (close to the boarder to Azerbaijan) and meet with Alexander Kurashvili (veterinary from the customs department) accompanied by Lia Chargeishvili (the deputy head of Veterinary Service Department)

2 mission member stays at T'bilisi and work on the draft mission report

15.00-16.00 Meeting with Guguli Gugushvili (doctor of biological science and tick specialist)

16.00-17.00 Meeting with Matthias Kramer (epidemiological expert from FAO) at the Ministry of Agriculture

➤ WEDNESDAY, JULY 11<sup>th</sup>, 2007

9.00-10.00 Meeting with Nino Kochishvili (deputy representative of the EC in Georgia) and Tibor Balint (SPS expert, EU)

Work on the mission report and preparing meetings for the next two days

18.30 Conference call with FAO at the local FAO office

➤ THURSDAY, JULY 12<sup>th</sup>, 2007

9.00-10.00 Debriefing with Derek Muller (regional SDC director for the South Caucasus) and Niculin Jäger (deputy headn of Swiss embassy)

10.30-12.30 Meeting with Lali Durmishidze (World Bank delegate)

13.00-14.00 Meeting at the National Laboratory in T'bilisi with Tinatin Onashvili (chief of laboratory)

15.00-16.00 Meeting with Nukri Gugushvili (head of National Crisis Centre)

16.00-18.00 Meeting with Koba Dzamashvili (head of Department of Veterinary Service) and his team

➤ FRIDAY, JULY 13<sup>th</sup>, 2007

12.00-13.00 Meeting with Roland Geiger (representative of Bechtel company, subcontractor of US embassy for implementation for laboratory equipment)

20.00-21.00 Meeting with Petre Tsiskarishvili (Minister of Agriculture) and his deputy Alecander Tsintsadze.

At the airport meeting and Debriefing with Matthias Kramer (epidemiological expert from FAO)