FAO GUIDELINES FOR SURVEILLANCE OF PANDEMIC H1N1/2009[1] AND OTHER INFLUENZA VIRUSES IN SWINE POPULATIONS

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1. BACKGROUND

1.1 Pandemic H1N1/2009 Influenza

Current data and information on Pandemic H1N1/2009 influenza, reported for the first time in Mexico in April 2009, shows that the implicated virus is a genetic re-assortment of four different influenza virus strains that includes: (i) a human influenza gene segment, (ii) avian gene segments from North America, (iii) swine influenza gene segments from North America, and (iv) Eurasian avian-like swine gene segments. This combination of gene segments has never before been reported among swine or humans. The triple re-assortant, that includes genes of first three virus strains (i, ii and iii) were first seen at least ten years ago and have likely been circulating in pigs since then, causing only very occasional and mild disease in humans in close contact with pigs. The additional re-assortment between the first triple reassortment and the Eurasian pig influenza virus had not been detected previously in pigs or humans.

On 28 April 2009, WHO raised the pandemic alert from phase 4 to phase 5, indicating that the new virus had spread to several WHO regions around the world, and on 11 June 2009, from phase 5 to phase 6 indicating a global pandemic.

Although the novel virus was initially denominated “swine flu”, links between pigs and human cases are absent; while human-to-human transmission has clearly occurred. The current situation of Pandemic H1N1/2009 influenza urgently demands verification of whether such viruses are circulating among the pig population.

[1] Pandemic H1N1/2009 is the new name agreed between WHO, FAO and OIE to define the new A/H1N1 influenza virus which emerged in North America in 2009

1. 2. The human health situation

Pandemic H1N1/2009 influenza virus has been circulating in people in Mexico since mid-March 2009 and it has now spread worldwide. Many thousands of cases have been confirmed in over 100 countries, with occasional mortalities on most continents. Of additional concern is the expected increase in number of cases that require hospitalisation during the winter seasons (southern hemisphere followed by the northern hemisphere) and impact on business continuity, livelihoods and human welfare, and overwhelming health services.

1.3 "Classical Influenza viruses" in pigs

Classical swine influenza viruses are influenza A viruses that infect pigs. The most common subtypes are H1N1, H1N2 and H3N2. Classical swine flu is common in North and South America, Europe and parts of Asia; it has also been reported in Africa.

Acute swine influenza (SI) is characterized by a short incubation period (1-3 days) after which animals appear anorexic, inactive and have the tendency to huddle and pile. Fever (ranging from 40.5 to 41.7^{o}C) at this stage is present (this is why the animals tend to huddle). If animals are forced to move respiratory distress will become more evident. Open-mouthed abdominal breathing may be observed and movements are accompanied by paroxysms of coughing. Conjunctivitis, nasal discharge and sneezing may be observed.

Morbidity rapidly reaches 100% of the pigs but mortality is low and usually does not exceed 1%. Generally animals recover after 5 to 7 days after onset.
There is no clear evidence to support or reject the existence of long-term carriers.

Recovery of virus from nasal swabs has been successful in the past (Vannier et al, 1985) up to 29 days after initial infection. After 30-45 days and 60 days post-infection the disease failed to be transmitted to susceptible contact pigs. It is thus believed that the virus is maintained into the pig population because of constant replacement of susceptible animals.

This constant circulation may produce a situation in which the syndrome is much less clinically apparent or even sub-clinical in an endemically infected herd. This indicates that whilst the case definition above is a good indicator that the disease may be present (i.e. it is reasonably specific), there may be many instances where the infection is present without clear clinical signs (i.e., it is not possible to create a case definition of sufficient sensitivity). Preliminary results of a study of the cross-reactivity of serum samples from US pigs against the Pandemic H1N1/2009 virus by the United States Department of Agriculture (USDA), Agricultural Research Service (ARS), indicate that pre-existing

immunity induced by swine influenza viruses circulating in the US may not protect pigs against the Pandemic H1N1/2009 virus presently circulating in people. Thus, for the purpose of these guidelines it is assumed that the Pandemic H1N1/2009 virus behaves similarly in pigs as classical swine influenza viruses and as a consequence, if pigs are infected with this virus the disease will be manifested clinically.

Influenza viruses circulating in humans have the potential to transmit to pigs. A recent single outbreak of infection of the Pandemic H1N1/2009 virus in a pig herd was reported in Canada in May 2009, where the initial findings suggested that the pig herd may have contracted the virus from a worker who had recently returned from Mexico. Such transmission has also been reported more recently in Argentina and was being investigated. It is not surprising that this new influenza virus circulating in humans have the potential to transmit to pigs as any other more classical pig influenza viruses. There have also been suspicions in pigs, in May 2009, in Mexico (but this has not been confirmed yet). There are no reports elsewhere but it should not be unexpected that with increased surveillance, veterinary diagnostic laboratories will find this viruses circulating in pig populations. But to date there is no evidence that pigs are involved in disease spread.

There may be trade implications on pigs and pork products if the Pandemic H1N1/2009 virus is detected in pigs. Some countries have already banned imports of pork and pig products from countries where human cases have been confirmed. FAO upholds the principles of safe trade as described by the OIE http://www.oie.int/eng/press/en_090507.htm.

Furthermore as stated in the joint communiqué between FAO, OIE and WHO, swine influenza viruses do not constitute a food safety problem http://www.oie.int/eng/press/en_090507_bis.htm.

2. GUIDELINES FOR SURVEILLANCE OF PANDEMIC H1N1/2009 INFLUENZA

2.1 General Principles

Animal disease surveillance is defined by the World Organisation for Animal Health (OIE) (2009) "*As the systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information to those who need to know so that action can be taken*."

Disease surveillance is a tool for action; but despite increased pig and poultry surveillance activities, particularly in Europe and northern America, regarding swine influenza viruses, there are many countries in the world where surveillance systems do not have sufficient capacity in place to provide precise information on the extent and evolution of influenza virus circulation in pigs to implement appropriate intervention measures (standstill orders and time to allow for full recovery of affected swine; protection of animal handlers; improved hygiene) and do not consider swine influenza virus infections as a high priority in relation to other animal and public health problems.

Currently, there are no guidelines or set of defined strategies to address this disease. It is, though, known that a significant proportion of the industrial pig farms around the world apply vaccination as a strategy to control clinical disease caused by classical swine influenza viruses. Though swine influenza is presently not a notifiable disease, according to most country-level legislation or to the international community, all exceptional epidemiological events related to the occurrence of the Pandemic H1N1/2009 virus in swine or other species should be reported (including to the OIE).

In some countries, authorities and pig producers have begun routine surveillance to detect the presence of the Pandemic H1N1/2009 virus and to complete regular surveillance activities undertaken for other respiratory syndromes, such as porcine reproductive and respiratory syndrome (PRRS) to facilitate early detection or identify any change in the prevalence of diseases that do occur.

The adaptation of disease surveillance schemes to different pig production systems, especially disease surveillance targeting backyard or small pig producers, and in particular in developing countries is encouraged. Surveillance at this level should include the active participation of local communities and farmers to report actively respiratory cases in pigs.

If swine influenza viruses are identified in swine holdings, including the Pandemic H1N1/2009 virus, FAO recommends that the animals be given

supportive care and allowed to recover, as the disease is self limiting unless there is movement away from the farm or if susceptible animals are brought in during the acute phase of the disease. Culling of affected swine is not recommended. As stated above, animal handlers working with ill swine should protect themselves from potential zoonotic agents and should seek early medical attention if they become ill, feverish, or have respiratory or other symptoms. On the contrary, pig workers with symptoms of flu should not work on pig farms.

Current serologic tests do not differentiate between H1N1 strains; therefore serology to detect antibodies may be of low value for surveillance given that influenza viruses belonging to the H1N1 sub-type are common among pig populations and vaccination against swine influenza viruses is based on inactivated H1N1 (and H3N2 for Europe) vaccines. For these reasons, positive serology for H1N1 should not be used as the sole indicator of previous infection with the Pandemic H1N1/2009 influenza virus. Serology may be useful in holdings where swine influenza vaccination is not practiced to detect post-infection seroconversion (significant increase of antibody titers against the same antigen at 3-4 weeks interval) where infection is suspected if used in conjunction with other testing methods to confirm the presence of the virus.

For surveillance, virological assays are currently preferred over serology for the reasons described above. Molecular assays virus isolation techniques are the most sensitive and specific options for detection of Pandemic H1N1/2009 influenza viruses in pigs; however, as of July 2009 there is no standardized veterinary laboratory protocol available. Ideally, new protocols should allow the differentiation between the classical swine influenza viruses (H1N1, H1N2 and H3N2) and the Pandemic H1N1/2009 virus. While research and development are ongoing, the OIE FAO Animal Influenza network of international reference laboratories (OFFLU) offers a list of reference laboratories, a testing algorithm, and technical recommendations for sample collection and shipment (www.offlu.net: “Detection of influenza in swine”).

Molecular sequencing of the HA gene is currently the most definitive confirmation for the Pandemic H1N1/2009 influenza virus. As several different molecular assays have been modified and developed in recent months for detection of swine influenza, the H1 sub-type, and differentiation between classical and Pandemic H1N1/2009 strains, consultation with an influenza reference laboratory (www.offlu.net: “Pandemic H1N1 List of Diagnostic Laboratories”) is strongly recommended for the development of region-specific testing protocols; a brief outline of the molecular assays presently available is included in Annex 3. Additionally, national laboratory testing capacities should be taken into consideration when designing the surveillance plan (e.g. which tests can be performed by national/provincial laboratories, and sample

throughput per week) to ensure that adequate resources are available to conduct the testing.

2.2 Criteria to establish surveillance programme for Pandemic H1N1/2009 and classical influenza viruses in swine

Surveillance for the Pandemic H1N1/2009 influenza virus is aimed to answer one of three following questions:

- Are swine the source of human exposure?,
- Can we demonstrate of absence of the Pandemic H1N1/2009 virus?
- It is the Pandemic H1N1/2009 virus being detected and collected from swine populations?

2.3 Epidemiological unit and individual units of observation

Different from the approach in humans, the flu-like health event in swine cannot be referred to individual pig cases. For pigs, the unit of concern is constituted by a group of pigs that are physically confined within the same space with frequent contact between any other animal present in this physical space. The space could be an entire shed (if there is no further separation inside the shed) or could be individual pens (if sheds are divided into different pens) or, in case of backyard pigs, could simply be the place where animals are kept. These units do not correspond necessarily to the epidemiological unit and for the purpose of these guidelines is named the "individual unit of observation". The case definition adopted with this program refers to individual observation units and consequently each individual unit that matches the case definition will be sampled according to the criteria indicated.

2.4 Case definition

The health event that should be linked with a field investigation is the reporting of respiratory syndrome in pigs. A possible case of swine influenza is defined as: *A Cluster of clinical cases in pigs showing fever or sneezing or coughing or nasal or ocular discharge in at least one individual observation unit, developed within a one-week period and affecting at least 10% of the animals present in the unit.*

Should the event occur in backyard pigs where the number of animals is less than 10 it would be sufficient to observe at least two respiratory cases within a one-week period.

2.5 Questions and sampling criteria

The implementation of these guidelines assumes that the occurrence of respiratory syndromes in swine is a health event that is notified to the Veterinary Services and that following such notification actions should take place.

The proposed guidelines covered the "Questions" described in Section 2.2 of this document:

(A) Are swine the possible source of human cases of Pandemic H1N1/2009 influenza virus?

Epidemiological investigations of human cases of the Pandemic H1N1/2009 influenza virus by tracing back potential contact(s) with pig herds to investigate if pigs are infected. Veterinary and Public Health authorities should coordinate efforts at the national and local level to standardize epidemiological investigations at the animal-human interface.

This option is activated whenever a confirmed human case is reported to have had contact with pigs. It is assumed that human cases are investigated and that the information on whether or not the identified case had been exposed to pigs would be available. For the purpose of these guidelines for surveillance, having consumed pork products is not be considered as a risk factor for influenza but only contact with live animals. A window period of exposure for the person/s affected should be identified in order to optimize which holdings should be investigated (in early 2009 in Mexico for instance, timely exposure was defined as within the two weeks preceding the onset of human symptoms).

Rather than considering only occupational exposure (which assumes daily contact with pigs) non-occupational exposure to pigs should also be considered such as visiting a farm. The definition of exposure and its possible gradient should be established in close cooperation with the Public Health Authorities.

This preliminary information may lead to the identification of one (or more) pig farm(s) where investigation is required. In case of occupational exposure at gathering points such as workers in a slaughterhouse or market, the potential number of pig farms requiring investigation may be high. Confirmation that pigs were the source of infection might be supported by virus sequence comparison between pig and human viruses

A.1 Target pig population for sampling

The target pig population to be investigated is those pig farms where a contact with human cases was established or where occupational exposure in slaughterhouses/markets occurs. In this case, pig slaughtered should be traced back to the farm of origin which also be included in the target population for sampling.

A.2 Sampling criteria

Individual farms should first be screened in order to identify the clinical status which should be categorized as:

C1	*farms where there are on-going respiratory cases that match the case definition adopted (on-going);*
C2	*farms where respiratory cases (matching the case definition adopted) have occurred within the previous 30 days but at the date of the visit there are no cases occurring (occurrence of clinical cases in the previous 30 days)*
C3	*farms where respiratory cases have occurred more than one month ago (occurrence of clinical cases more than 1 month ago)*

Should a farm be categorized as C1 or C2, the herd will be eligible for the collection of nasal swabs (for virological analysis). Should the farm be categorized as C3, the herd will be not eligible for immediate sampling.

A.3 Sample type and size

For farms categorized as C1 or C2, nasal swabs should be collected as follows:

(i) in C1 farms, samples should be collected from no more than 20 animals (as indicated before for farms categorized as question A/C1) for each observation unit. Should the number of clinical cases be more than 20 all nasal swabs will be collected from clinically affected animals; if the number of cases is less than 20 samples will be collected from all the clinically affected animals plus other in contact animals to obtain the necessary 20 samples.

Should the overall number of pigs present in the observation unit be less than 20, samples will be collected from all of them.

(ii) in C2 farms, the number of nasal swabs to be collected follows the criteria of 1% of prevalence and 95% confidence (see table in Annex 1).

(iii) For pig farms falling in category C3 (and consequently is not eligible for immediate sampling) a monitoring period should be initiated. The starting date (time 0) for the follow-up will be the date of the visit, the end of the follow-up period will be the date of the visit + 14 days. During this period the pig farm should ideally be visited at least twice (i.e. weekly) to verify that there are no signs of respiratory disease developing. The owner is obliged to report any unusual sign detected in the farm. Should cases of disease be detected consistent with the case definition used, the farm will be sampled according to the procedures already established in this document for category C1.

Note: The sample size as a function of the group size can be estimated from Tables 1, 2, 3 and 4 in Annex 1

For each sample collected indication (see form A.3) should be provided whether the sample has been collected from an apparently healthy or clinically affected pig.

(B) Can we demonstrate absence of the Pandemic H1N1/2009 virus in pigs?

Pig herds or compartments wanting to demonstrate freedom from the Pandemic H1N1/2009 influenza virus.

There are no official international requirements for, nor recognition of countries, zones, compartments or individual farms as free from classical swine influenza viruses or from the Pandemic H1N1/2009 virus. However, if the decision to demonstrate freedom is made, it is recommended that the guidelines in Chapter 1.4.1 of the OIE Terrestrial Animal Health Code be followed.

B.1 Target population

All pig farms in a country, zone or compartment. Pigs in slaughterhouses or markets also can be included.

B.2 Sampling criteria

Demonstration of freedom of the novel influenza A-virus would need to be based on factors such as the implementation of multistage random surveys adequate to detect at least 1% of prevalence if the virus is circulating with a 99% confidence (for each stratum of the sampling frame). The capacity of veterinary services for reporting and support from laboratories to make differential

diagnoses with other respiratory syndromes aimed to identify cases compatible with influenza in pigs should also be considered.

B.3 Sample type and size

Sample size for different group sizes for this question is given in tables in Annex 1. For demonstration of absence of virus circulation, particularly where this is fro trade purposes, it is recommended that a sample size be used that is sufficient to detect a level of 1% circulation with 99% confidence. Specialist advice on sample design may be required.

(C) General surveillance strategy for influenza viruses in swine populations?

General surveillance aimed to detect and collect swine flu viruses (including classical and Pandemic H1N1/2009 influenza viruses).

Targeted or active surveillance of pigs could be considered at slaughterhouses, abattoirs, and in some countries animal markets. Surveillance should be based in animals showing clinical respiratory signs.

C.1 Target population

Pigs on farms with respiratory disease, particularly when the signs are consistent with the case definition of swine influenza. If events that match the case definition are reported to the Veterinary Services the farm should be visited by an official or authorized veterinarian. The veterinarian will proceed to inspect the observation unit/s where animals are reported to be affected. Also pigs on slaughterhouses and markets with respiratory diseases should be investigated and traced back to pig farm of origin and be included in the target population for sampling as described below.

It is important that the reporting of such disease events to the veterinary authorities is encouraged.

C.2 Sampling criteria

Individual pig farms should first be screened in order to demonstrate their clinical affected status. This should be equivalent to the C1 category described above.

C.3 Sample type and size

Samples should be collected from no more than 20 animals (as indicated before for farms categorized as question A/C1) for each observation unit. Should the number of clinical cases be more than 20 all nasal swabs will be collected from clinically affected animals; if the number of cases is less than 20 samples will be collected from all the clinically affected animals plus other in contact animals to obtain the necessary 20 samples.

Should the overall number of pigs present in the observation unit be less than 20, samples will be collected from all of them. For each sample collected indication (see form A.3) should be provided whether the sample has been collected from an apparently healthy or clinically affected pig.

3. RISK MANAGEMENT OF INFLUENZA VIRUSES IN SWINE POPULATIONS AND AT THE ANIMAL/HUMAN INTERFACE

In order to reduce the risk of transmission of Pandemic H1N1/2009 influenza within the animal population or between animals and humans FAO recommends the following:

- *A Case definition* for suspected and probable cases of swine influenza as the one defined in point 2.4 should be identified before starting the surveillance programme.
- *Outbreak investigation* protocols and *laboratory sampling* procedures should be developed and disseminated to all veterinary professionals and animal health workers.
- *Regular surveillance* for porcine respiratory diseases should be intensified, cases of porcine respiratory syndrome should be investigated by the national veterinary authorities and differential diagnosis carried out by the national laboratory. If Pandemic H1N1/2009 influenza virus is suspected, samples should be confirmed using molecular sequencing techniques with support from international reference laboratories if needed (www.offlu.net: "Pandemic H1N1 List of Diagnostic Laboratories"). OIE and FAO as international organisations dealing with animal health issues should be informed if the Pandemic H1N1/2009 influenza virus is confirmed in pigs.
- *Movement restrictions* should be implemented by farms or holdings with swine after a confirmatory diagnosis of Pandemic H1N1/2009 influenza virus. Restriction measures should be in force until at least one week to ten days after the last animal has recovered. The overall duration of the disease and virus excretion is difficult to estimate, because it depends on the number of susceptible animals present in any given farm, the layout of the farm and work practices. In industrial pig farming systems, restriction measures may rapidly cause overcrowding. In such circumstances sending clinically healthy animals for regular slaughter, under veterinary inspection, may represent an alternative and avoid animal welfare issues (i.e., overcrowding). Animals suffering from swine influenza can be separated from healthy herd-mates and allowed to recover; there is no need to cull affected animals. In case of suspected outbreak movement restriction should be in place until a laboratory diagnosis is available.
- *Biosecurity and personal protection*. Animal handlers and veterinarians should wear protective gear and ensure that proper cleaning and disinfection is conducted on equipment and material between units to minimize the risk of spreading pathogens between pigs at different locations and being infected by zoonotic agents, including influenza.

Workers in one house should not be allowed to visit or work in other houses nor have pig sites of their own.

- Persons who work directly with swine should be urged not to go to work if they have any signs of respiratory disease, fever or any influenza-like illness.
- Biosecurity should be increased in pig herds to prevent transmission on fomites and mechanical vectors such as vehicles.
- *Vaccination for swine influenza*. In high risk areas, a swine influenza vaccine could be used in swine as long as it is considered effective against the circulating strain and is permitted by the relevant authorities.

FAO encourages country authorities to remain vigilant, gathering epidemiologic data, reporting unusual influenza-like illnesses in swine, assisting in facilitating the forwarding of appropriate specimens to international influenza reference laboratories (OFFLU Network) and responding to urgent animal health and zoonotic disease problems.

Through the FAO/OIE/WHO Global Early Warning System (GLEWS), timely data and information are shared between the three international organizations, which communicate and coordinate with other partners, including reference laboratories, Centers for Disease Control and Prevention (CDC) and the European Center for Disease Prevention and Control (ECDC), key national and academic institutions, and lending or development grant organisations.

Information sharing between countries at international level and communication of the results of surveillance activities for classical swine influenza, the emergent Pandemic H1N1/2009 influenza virus, and other novel viruses would improve the overall understanding of influenza dynamics and the different types of pig production systems where they circulate.

A proposal to include swine influenza viruses, including the Pandemic H1N1/2009 influenza virus as an OIE listed disease should be analysed carefully. Classical swine influenza is prevalent in pigs worldwide. What is needed is to improve early detection and reporting and the knowledge of the epidemiological situation of animal influenza viruses in order to monitor any potential shifting to viruses of zoonotic potential or those of increased virulence.

FAO member countries can request assistance for sample or specimen dispatch to through the EMPRES shipping facilities (EMPRES-Shipping-Service@fao.org) for confirmation or agent characterisation.

Annex 1

Type of samples and sample size

(For more detailed information on collection of samples, please see http://www.offlu.net/OFFLU%20Site/OFFLU_SwInf.pdf)

Nasal swabs (for virological examination) are the sample of choice. Sampling should give priority to animals that show more acute signs of disease (fever, sneezing and nasal/ocular discharges). Collection of blood samples (for antibody determination) is likely to be of low value as H1N1 influenza is a common disease in pigs and they are also often vaccinated against this infection. Animals to be sampled will need to be restrained and deep intranasal swabs collected while avoiding contamination of the swab with organic material on the snout. Swabs should be placed immediately in separate tubes/containers with the appropriate transport medium. Samples should not be pooled. All samples must be labelled with a unique identification code; the same code will be used when recording animal information on the sampling protocol. Samples are to be sealed and maintained in a refrigerated environment (icepacks or other).

Preferably sterile commercial swabs should be used that come with their own tube and viral transport medium. When using separate swabs and tubes, use sterile swabs and avoid wooden shafts. Synthetic tips are preferred (rayon or dacron). After sampling, each swab should be placed into a sterile glass or plastic container with a screw cap; the shaft of the swab might need to be cut fit into the tube. The containers should contain viral transport medium or equivalent (phosphate buffered saline [PBS], supplemented with antibiotics and bovine serum albumin [5 mg/ml]); foetal bovine serum should not be included. Clearly label with swab number and immediately refrigerate or chill.

Sample size

Detection of 1% shedding, 99% confidence:

Group size	≥10,000	5000	3000	2000	1000	500	400	300	200	100
Sample size	459	429	399	374	315	240	214	182	140	83

Detection of 1% shedding, 95% confidence:

Group size	≥10,000	5000	3000	2000	1000	500	400	300	200	100
Sample size	299	283	272	261	231	188	172	150	120	75

Detection of 5% shedding, 99% confidence:

Group size	≥2000	1000	500	400	300	200	100	50	25
Sample size	90	83	77	74	70	63	48	33	20

Detection of 5% shedding, 95% confidence:

Group size	≥2000	1000	500	400	300	200	100	50	25
Sample size	59	56	53	52	50	46	38	28	18

Annex 2 (Form A.1)

Contact details of the staff person visiting the pig farm

Name .....

Address .....
.....

Telephone (if available) .....
E-mail address (if available) .....

Preliminary data

(1) Province .....
(2) District .....

(3) Town/village .....

(4) Owner of farm.....

(5) Latitude/Longitude of the farm (if available)
Lat..... Long .....

(6) Type of pig production system:
[ ] large/industrialized [ ] medium/commercial [ ] small scale/backyard
[ ] free ranging [ ] closed housing

(7) Total number of pigs present in the farm: .....
____ piglets ___ weaners ____ growers/finishers ____ sows ____ boars

(8) The farm is investigated because of:
[ ] Notification of respiratory cases [ ] in relation to human case/s

(9) If the investigation is undertaken in relation with human cases please indicate if the pig farm is categorized as:
[ ] C1 (clinical disease ongoing) [ ] C2 (clinical disease in past 30 days) [ ] C3 (history of clinical disease >30 days)

(10) Indicate if a vaccination program is carried out in the farm:
[ ] no [ ] yes, every 6 months [ ] yes, every year [ ] yes, irregularly

(13) Please indicate when the last vaccination against swine influenza (if any) was performed: ...../...../.....

(14) Commercial name of the vaccine .....
Manufacturer .....

(15) Date of the visit ..... / ..... / .....

Signature

.....

Annex 2 (Form A.2)

Farm layout of the farming system and description of the production system

Annex 2 (Form A.3)

Sample record sheet

			Type of animal					Sex		Status			
Number (a)	Animal ID or Pen ID (b)	Age (c)	Breeding adult	Suckling piglet	Weaner (<30 Kg)	Fattener (>30 Kg)	Approximate weight in Kg	M	F	Healthy	Sick	Dead	Comments

Legend:

(a) indicate the serial number assigned to the sample and reported to the vial;
(b) indicate the ID of the animal (if any) or the ID of the shed/pen indicated in the layout;
(c) indicate age in months

Annex 3 (as of July 2009)

	Assay	Target gene	Detection
Influenza A detection	[a] CDC InfA	M	avian/swine influenza
	[b] 2009-modified Spackman SEPRL	M	avian/swine influenza
	[c] 2009-modified Spackman CFIA	M	avian/swine influenza
	[d] 2009-modified AAHL	M	avian/swine influenza
	[e] 2009-modified Spackman CVI	M	avian/swine influenza
	[f] FLI- IVA-NP2RT-qPCR	NP	avian/swine influenza
Swine influenza detection	CDC SwInf	NP	swine- vs human-origin
	[1] CDC SwH1	H1	swine H1 vs other SwInf
	[2] 2009 SEPRL N1 NA Classic/Novel	N1	Pandemic N1 2009 vs classic North American N1
	[g] VLA H1-118	H1	Pandemic H1 2009 vs all other H1
	CVI nH1N1-2009	H1	Pandemic H1 2009 vs other swine H1
	FLI- RT-qPCR-IVA-H1N1-1	H1	Pandemic H1 2009 vs all other H1
	FLI- RT-qPCR-IVA-H1N1-2	H1	Pandemic H1 2009 vs all other H1
	CVI-SIV H3	H3	H1 vs H3 SwInf strains

a Centers for Disease Control, Atlanta, GA USA

b USDA ARS Southeast Poultry Research Laboratory, Athens, GA USA

c Canadian Food Inspection Agency, Winnipeg, Canada

d Australian Animal Health Laboratory, Geelong, Victoria, Australia

e Central Veterinary Institute of Wageningen UR, Lelystad, The Netherlands

f Friedrich Loeffler Institut, Riems, Germany

g Veterinary Laboratories Agency, Addlestone, Surrey UK

1 CDC SwH1 assay differentiates swine-origin H1 from other swine influenzas - it does *not* distinguish the Pandemic H1 2009 from other swine H1

2 SEPRL N1 assay differentiates the Pandemic N1 2009 from the North American classical N1 - it does *not* distinguish the novel N1 from classic Eurasian N1