

Review of vigilance with respect to **Classical and African Swine Fevers** in France in 2014

Clara Marcé (1)* (clara.marce@agriculture.gouv.fr), Olivier Bourry (2)**, Mireille Le Dimna (2)**, Evelyne Hutet (2)**, Stéphane Gorin (2)**, Stéphane Quéguiner (2)**, Céline Deblanc (2), Gaëlle Simon (2), Nicolas Rose (2), Thomas Quintaine (3), Jean-Daniel Masson (3), Sophie Rossi (3), Marie-Frédérique Le Potier (2)**

(1) Directorate General for Food, Animal Health Office, Paris, France

(2) ANSES Ploufragan-Plouzané Laboratory, France

(3) ONCFS, Gap, France

* Management team member of the French National Epidemiological Surveillance Platform for Animal Health (ESA Platform)

** National Reference Laboratory for classical and African swine fevers

Abstract

In an epidemiological context in which African swine fever (ASF) has reached member states of the East of Europe (Poland, Lithuania, Latvia, Estonia), and classical swine fever (CSF) is still present in Hungary and Latvia, the confirmation of disease-free status of France and the early detection are still the main objectives of the surveillance performed.

As in previous years, vigilance with respect to CSF has been based on serological and virological surveillance at the slaughterhouse and in breeder-multiplier farms, as well as on event-based surveillance. Surveillance of wild boars in the Eastern part of France has been maintained in 2014, based on serological and virological analyses of hunted boars and virological analysis of boars found dead in the wild, with a reduction of the surveillance for the hunting season 2014-2015. Furthermore, a capture-recapture study on young wild boars was implemented in 2013-2014 in municipalities where seroprevalence was above 10% in young wild pigs in 2012-2013. Vigilance with respect to African Swine Fever (ASF) was based on event-based surveillance and was completed by a serological survey on pigs slaughtered in Corsica at the beginning of 2014.

In 2014, event-based surveillance led to one clinical suspicion being reported in domestic pigs and two in wildlife, while the programmed surveillance in CSF led to several serological suspicions. None of the suspicions were confirmed.

Keywords

Regulated disease, Category 1 health hazard, CSF, ASF, Epidemiological surveillance, Swine, France

Résumé

Bilan de la vigilance à l'égard des pestes porcines classique et africaine en France métropolitaine et Outre-mer en 2014
Dans un contexte épidémiologique où la peste porcine africaine a atteint certains États membres de l'Est de l'Union européenne (Pologne, Lituanie, Lettonie, Estonie) et où la peste porcine classique (PPC) est toujours présente en Hongrie et Lettonie, la démonstration du statut indemne de la France vis-à-vis de ces deux maladies, et la détection précoce d'une émergence restent les principaux objectifs de la surveillance menée.

Comme les années précédentes, la vigilance à l'égard de la PPC a reposé sur une surveillance programmée et sur une surveillance événementielle. La surveillance programmée est réalisée par sérologie en élevage de sélection-multiplification, et par sérologie et virologie à l'abattoir. La surveillance de l'ancienne zone infectée par la PPC chez les sangliers dans l'Est de la France, s'est poursuivie en 2014, basée sur l'analyse sérologique et virologique des sangliers tués à la chasse et l'analyse virologique des sangliers trouvés morts en nature, avec un allègement de la surveillance pour la saison de chasse 2014-2015. Par ailleurs, une étude par capture-marquage-recapture de marçassins a été conduite en 2013 et 2014 dans les communes pour lesquelles la séroprévalence était supérieure à 10% chez les jeunes sangliers en 2012-2013. La vigilance à l'égard de la PPA repose sur une surveillance événementielle et a été complétée par une enquête ponctuelle de séroprévalence PPA sur les porcs à l'abattoir en Corse début 2014.

En 2014, la surveillance événementielle a conduit à la notification d'une suspicion clinique de peste porcine en élevage de porcs et à deux suspicions cliniques chez des sangliers sauvages, tandis que la surveillance programmée vis-à-vis de la PPC a conduit à plusieurs suspicions sérologiques. Aucune suspicion a été confirmée.

Mots-clés

Maladie réglementée, danger sanitaire de 1^{ère} catégorie, PPC, PPA, épidémiosurveillance, suidés, France

This article presents the results of the classical and African swine fever surveillance programme in 2014 (Box). Of the 101 départements in mainland France and overseas, 90 départements answered, at least in part, the questionnaires that were sent out to them, on the number of swine covered by surveillance, suspicions and the results of analyses carried out.

Programmed surveillance

Slaughterhouse surveillance

Classical swine fever (CSF)

The results of the slaughterhouse surveillance programme for CSF are as follows (Table 1):

- Of the 10,210 pigs to be tested using a serological assay (ELISA) across the entire country, 8,039 breeding pigs and 750 slaughter

pigs were sampled (86% coverage rate). Screening involved 1,187 pig holdings⁽¹⁾. On average, seven samples were taken per holding.

- Of the 3,000 samples targeted for virological (PCR) tests nationwide, 1,861 blood samples (from 1,481 breeding pigs and 380 slaughter pigs) were actually taken (62% coverage rate), from 285 pig holdings. On average, seven samples were taken per holding.

Overall, 2.7% (8,039 serological tests and 1,481 virological tests) of culled breeding pigs⁽²⁾ were serologically or virologically tested at the slaughterhouse, a rate comparable to that observed in previous years (i.e. 2.7% of culled breeding pigs tested in 2013, 2.5% in 2012).

1. One pig farm can comprise several pig holdings and is considered as such if the herds of these holdings are raised separately in independent facilities, at least 500m apart. The holding is the epidemiological unit used for surveillance purposes.

2. The slaughter data are provided by the Statistics and forward studies service (SSP) and processed by the DGAL's Office of slaughterhouses and cutting plants (BEAD).

African swine fever (ASF)

Because of the proximity of infected territories, two geographical zones are subject to programmed surveillance for ASF at the slaughterhouse. On Reunion Island, due to its proximity to Madagascar in particular, a serological surveillance programme has been in place for more than 15 years, based on 250 samples taken at the slaughterhouse in the framework of programmed surveillance for CSF. This scheme was continued in 2014.

In Corsica in 2014, due to the proximity with Sardinia where ASF is enzootic, ASF was the subject of a one-time serological study at the slaughterhouse, in addition to the outbreak surveillance.

Surveillance in nucleus and multiplier herds

Regarding surveillance in nucleus and multiplier herds in 2014, 5,410 samples were taken from 311 of the 505 nucleus and multiplier holdings registered in 2014 (62% of holdings sampled).

On average, 17 samples per holding were taken in 2014, compared with 16 in 2013.

To give a very general idea of the pressure of serological surveillance of CSF at the national level (at the slaughterhouse and in holdings), approximately 2.5% of all breeding pigs (production level, nucleus and multiplier herds and artificial insemination centres) underwent sampling (8,039 samples were taken in the slaughterhouse and 5,410 in holdings).

Results of Programmed surveillance

Overall, out of the 14,199 serological samples taken for CSF testing, 24 produced a non-negative ELISA result, of which 19 resulted from screening in nucleus and multiplier herds, and five from screening at the slaughterhouse. In total, regardless of the type of farm, 24 pig sera were tested by the NRL with the CSF/ruminant pestiviruses differential virus neutralisation assay, in order to rule out any possible serological cross-reaction with ruminant pestiviruses. None of these serological suspicions were confirmed. These 24 non-negative, first-line serological test results represent a false positive rate of 0.2%, compared with a rate of 0.3% observed in 2013.

Regarding CSF virological testing at the slaughterhouse, no positive reactions were detected, in line with expectations and highlighting the very high specificity of the PCR test.

As part of the programmed serological surveillance for ASF on Reunion Island, the NRL received 29 sera from 29 pigs. Due to the unavailability of the ELISA kit at the Reunion laboratory, 26 sera underwent first-line testing by the NRL: eight giving a non-negative result were retested using the immunofluorescence monolayer assay (IFMA). Three other sera were received for retesting following a non-negative ELISA result at the Reunion departmental veterinary laboratory; these were all ruled out by IFMA.

As part of the one-time survey of ASF seroprevalence conducted at the slaughterhouse in Corsica in early 2014, the 401 samples taken were all found to be negative, demonstrating the current absence of circulation of the disease in the population of domestic pigs reared outdoors and sent to the slaughterhouse (Desvaux *et al.*, 2014). All of the favourable

results on these 400 sera helped to ensure that the prevalence during the sampling campaign did not exceed 0.74% with a 95% confidence level, for a population of around 8,000 pigs.

Outbreak surveillance

Clinical suspicions

One pig holding (Finistère *département*) was the subject of a clinical suspicion of swine fever in 2014, with four pigs tested at the NRL. Two wild boars were also tested by the NRL in the framework of a clinical suspicion in wildlife reported by the SAGIR⁽³⁾ network (Lozère and Corse du Sud *départements*). All of these suspicions were ruled out for CSF and ASF.

Surveillance of CSF in wildlife

Wildlife surveillance in eastern France (Moselle and Bas-Rhin *départements*) (Rossi *et al.*, 2011) investigated 3,827 wild boars in 2014. Due to the favourable epidemiological situation (no new cases and continued decrease in seroprevalence) (Rossi *et al.*, 2011; Marcé *et al.*, 2014), programmed surveillance was relaxed in October 2013 for the area that had previously been infected and vaccinated, called the high observation zone (ZOR) since 2012. Spleen and blood samples were taken only from wild boars less than one year old, shot during hunting, with routine serological analysis and virological (PCR) analysis only for seropositive wild boars. Animals found dead continue to be systematically tested using serological and virological analyses. Two wild boars were thus analysed in this framework via the SAGIR network in 2014. In total, throughout 2014, 51 virological analyses and 3,904 serological analyses (3,827 ELISA and 77 virus neutralisation assays) were performed in the programmed surveillance scheme. In all, 26 serological analyses proved positive (including 18 in animals of less than one year), 21 were ambiguous and 67 could not be interpreted or did not produce a result. All the virological analyses were negative. In general, seroprevalence continues to decline in the monitored zone, in line with the results of previous years (Rossi *et al.*, 2015a). In 2014, seroprevalence was thus below 1% in young animals of less than one year and below 3% in adults.

Since October 2013, following implementation of the relaxed programmed surveillance scheme, the sera from young wild boars in the ZOR found positive after first-line ELISA assays have undergone confirmatory analysis in order to determine the maternal (vaccine) or post-infectious origin of these antibodies. Thus, 56 sera found positive by ELISA were tested at the NRL for the 2013–2014 hunting season with the differential virus neutralisation assay using the “Alfort” CSF strain (genotype 1, equivalent to the C strain in the vaccine used from 2004 to 2010) and the “Bas-Rhin” CSF strain, (genotype 2.3, strain responsible for the outbreak in the Northern Vosges). Of these 56 sera, 25 were positive for antibodies neutralising the CSF virus, although it was not possible to demonstrate any clear difference between the two Alfort and Bas-Rhin strains. Since September 2014, these sera have only been tested by differential virus neutralisation using the Alfort strain of CSF and the “Aveyron” strain of the border disease virus, in order to check the specificity of the serological result with regard to CSF. Of the 22 sera analysed, four were confirmed as carriers of CSF virus neutralising antibodies.

To supplement this outbreak surveillance, the capture-mark-recapture (CMR) study carried out in municipalities in which seroprevalence in yearling wild boars was greater than 10% in 2012, was continued, with systematic serological and virological analyses in wild boar marked and recaptured, or shot during hunting, in order to determine the origin of the antibodies (infectious or maternal) in this age class. Among the 134 individuals recaptured, twelve were seropositive, including an adult sow. A single positive PCR result was reported during the study, and was ruled out by the NRL. Repeated capture of young wild boars

Table 1. Results from the classical swine fever surveillance programme at the slaughterhouse in 2014

	Serological testing (ELISA)	Virological testing (PCR)
Target number of samples	10,210	3,000
Actual number of samples	8,789	1,861
Coverage rate (%)	86	62
Number of pig holdings sampled	1,187	285
Average number of pigs tested per holding	7	7
Proportion of culled breeding pigs tested	2.5%	0.5%

3. Epidemiological surveillance network for wildlife (ONCFS - National and departmental hunting associations).

Objectives of the surveillance programme

- Early detection of outbreaks in domestic pigs (CSF and ASF).
- Provide evidence that France is free of CSF.

This surveillance also makes it possible to maintain the operational capacity of the network of serological and virological laboratories accredited for CSF diagnosis, to ensure that they can respond effectively to the needs that would arise in the event of an epizootic.

The population monitored

- Domestic pigs and farmed wild boars throughout mainland France and its overseas départements.
- Wild boars in north-eastern France.

Surveillance procedures

Outbreak surveillance

Outbreak surveillance targets both CSF and ASF and is based on the principle that any person (veterinarian, farmer, animal trader, hunter, SAGIR network, etc.) suspecting a case of CSF or ASF must notify the DDecPP.

Programmed surveillance

Programmed surveillance is carried out in slaughterhouses and in holdings (only in nucleus and multiplier holdings).

In slaughterhouses, random serological and virological tests for CSF are carried out on slaughtered breeding pigs throughout France:

- for serological tests, 10,210 samples should be tested annually to detect a prevalence rate of 0.05% (at a confidence level higher than 99%, providing that sampling is random), and thus attest to the disease-free status of mainland France.
- for virological tests, 3,000 samples should be tested to detect a prevalence rate of at least 0.1% (at a 95% confidence level); given that viraemia is short-lived (2-3 weeks at most), the probability of detecting viral circulation in the population is low, so these tests are used first and foremost to maintain the technical skills in the network of accredited CSF PCR laboratories.

In nucleus and multiplier holdings (in which the spread of CSF/ASF is potentially high), annual testing is carried out in each holding: 15 samples for serological tests (for a *minimal* within-holding prevalence rate of 20% at a 95% confidence level).

CSF surveillance in wild boars in north-eastern France

France regained its disease-free status for wild boars on 14 November 2011; surveillance has thus been restricted to a smaller area since 1 January 2012 (DGAL/SDPSA/N2011-8283). The perimeter of this zone was further reduced in October 2013, and was restricted in 2014 to the former infected zone, now called the high observation zone (ZOR). In this zone, and on a voluntary basis, any wild boar hunted or found dead must have its spleen removed for virological (PCR) analysis and a blood sample for ELISA analysis must be taken in a vacutainer blood collection tube. A sample must be taken for virological (PCR) analysis from any wild boar found dead, and for all hunted young wild boars (less than 1 year old), a blood sample for ELISA analysis must be taken in a vacutainer blood collection tube; if the ELISA results are positive, a virus neutralisation assay and virological (PCR) analysis must also be performed.

Definition of suspected cases and confirmed cases

"Suspected to be infected with swine fever": any swine showing symptoms and/or *post mortem* lesions suggestive of swine fever (CSF or ASF) that cannot be attributed with certainty to any other disease or showing non-negative first-line test results.

"Suspected to be contaminated": any swine likely, according to epidemiological information, to have been exposed directly or indirectly to a swine fever virus.

A holding is suspect when it holds at least one suspect animal or when it has an epidemiological connection with a confirmed outbreak.

An outbreak of swine fever may be notified when a holding meets one or more of the following criteria:

1. CSF or ASF virus isolated in an animal or in any derived product thereof.
2. Clinical signs suggestive of swine fever observed in an animal, and viral antigen or genome for CSF (RNA) or ASF (DNA) detected and identified in samples taken from the animal or cohort.

3. Clinical signs suggestive of swine fever observed in an animal of a susceptible species and the animal or members of its cohort show specific antibodies against CSF or ASF viral proteins.
4. CSF or ASF viral antigen or genome observed and identified in samples taken from swine AND the animals show specific antibodies against CSF or ASF viral proteins.
5. Clear epidemiological connection with the appearance of a confirmed swine fever outbreak and at least one of the following conditions is met:
 - at least one animal shows specific antibodies against CSF or ASF viral proteins,
 - the CSF or ASF viral antigen or genome is detected and identified in samples taken from at least one individual of a susceptible species.

Health control measures

CSF and ASF are Category 1 health hazards, notifiable diseases, and subject to emergency response plans.

Distinction between low serological suspicion and high serological suspicion

When an accredited laboratory announces that one or more individual serological tests resulted in positive or ambiguous results, the holding is placed under APMS surveillance. There are two levels of suspicion, defined since February 2012.

If only one or two samples are positive or ambiguous and there are no suspicious clinical signs or unfavourable epidemiological conditions, suspicion is low and the APMS is adapted to this less threatening situation: movements to a slaughterhouse or a terminal holding are allowed providing that the holding with serological suspicion has been clinically and epidemiologically sanctioned and that the slaughterhouse or destination holding has agreed in writing that animals can be introduced from this holding, and that the destination holding is also placed under APMS. Culled animals are consigned until there are results disproving the suspicion.

In the case of high CSF or ASF suspicion based on clinical signs or epidemiological conditions, an APMS is ordered and no exceptions are possible for the movement of animals. If infection is confirmed, the holding is placed under APDI. All swine are culled immediately, the carcasses are disposed of, the farm is disinfected, and all animal products and by-products are disposed of. Repopulation cannot take place for at least 30 days. This period is longer in the case of ASF infection if the intermediate host (*Ornithodoros* ticks) is likely to have been involved.

In holdings with an epidemiological connection with an outbreak (contact holdings), conservative measures are taken under APMS and call for enhanced surveillance.

In the vicinity of the outbreak, a protection zone with a radius of 3 km is established as well as a surveillance zone with a radius of 10 km within which surveillance, movements and possible exceptions are not as strict as within the protection zone. The measures specific to these regulated zones are available in the Memorandum DGAL/SDSPA/N2006-8194 as amended on the swine fever emergency response plan.

Regulatory References

Directive 2001/89/EC on Community measures for the control of classical swine fever

Directive 2002/60/EC laying down specific provisions for the control of African swine fever

Decision 2008/855/EC concerning animal health control measures relating to classical swine fever in certain Member States

Decision 2004/832/EC approving the plans for the eradication of classical swine fever in feral pigs and the emergency vaccination of such pigs in the Northern Vosges, France

Decision 2002/106/EC approving a Diagnostic Manual establishing diagnostic procedures, sampling methods and criteria for evaluation of the laboratory tests for the confirmation of classical swine fever

Ministerial Order of 23 June 2003 laying down the measures for the control of classical swine fever

Ministerial Order of 11 September laying down the measures for the control of African swine fever

has made it possible to confirm the disappearance of the neutralising antibodies in ten of the eleven young wild boars initially captured (the last young animal was not recaptured). Titration of neutralising antibodies revealed a strong differential in titres between the adult sow and the young animals. Overall, these results support the hypothesis of the presence of maternal antibodies in young wild boars born three years after the discontinuation of oral vaccination (Rossi *et al.*, 2015a).

Costs

In 2014, the French government invested €145,700 for the surveillance and control of CSF and ASF. Laboratory costs amounted to €135,100 for programmed screening and €9,980 for health control measures. Veterinary costs incurred for health control measures were €620. These figures do not include government funds used for carrying out programmed surveillance in nucleus and multiplier herds that belong to the Breeding Pig Agency, which amounted to €27,610 for the serological analyses (non-consolidated data when this article was submitted, the given Figure is probably an underestimate). French government funds of over €300,000 were spent for wildlife surveillance.

Discussion

As in previous years, the results from the CSF and ASF surveillance programme in 2014 demonstrate that France has maintained its disease-free status.

For serological testing, the number of holdings covered by surveillance in the slaughterhouse in 2014 was comparable to that of 2013, but for virological testing, the decline already observed in 2013 was confirmed in 2014 (Marcé *et al.*, 2014), with the average number of samples per site remaining relatively stable. Overall, the coverage rates have gone from 92% and 98% respectively for serological and virological surveillance in 2012, to 86% and 73% in 2013, and to 86% and 62% in 2014. Regarding serological surveillance of CSF, the number of samples remained stable among breeding pigs and increased slightly among slaughter pigs. As a reminder, blood samples taken at the slaughterhouse aim to meet two objectives: 1) to provide information fundamental to confirming France's disease-free status and to provide proof to the European Union and international authorities that France is free of CSF and ASF, and 2) to maintain the operational capacity of the network of serological and virological laboratories accredited for CSF diagnosis (16 laboratories accredited for serological CSF tests of which eight are also accredited for virological ASF tests), so as to be able to respond effectively in the event of an epizootic. In 2014, an inter-laboratory proficiency test (ILPT) was organised for the CSF virological assay (PCR) and an ILPT for the CSF serological assay (ELISA technique and virus neutralisation technique) with satisfactory results for all the accredited laboratories.

Ideally, breeding pigs reflect the health status of the entire herd due to their long presence in the holding — much longer than that of slaughter pigs. This makes them a target of choice for meeting the first surveillance objective. The age of the pig is not a limiting factor for the second goal. Nonetheless, due to the difficulties in sampling breeding pigs at the slaughterhouse, mainly because some slaughterhouses that processed this type of pig have closed down or refocused their activity in certain *départements* on slaughter pigs, exceptions were allowed, such as those defined in the Memorandum DGAL/SDSPA/N2006-8033 of 7 February 2006 as amended, when samples could not be taken from breeding pigs. In these cases, samples were taken from slaughter pigs. Regarding sampling for virological tests, the total number of samples taken decreased again in 2014 and is now much lower than the target number (1,861 samples out of the targeted 3,000). There was a slight increase in the number of samples taken from breeding pigs, but also a drastic decrease in the number of samples taken from slaughter pigs. This overall decrease can be attributed to slaughterhouses that have ceased to process breeding pigs, with no compensatory sampling on slaughter pigs. In addition, the allocation of samples to be taken

by *département* was only updated in September 2014, due to these closures. Depending on the *départements*, this new allocation was not taken into consideration before 2015, which could explain the overall decrease in sampling for 2014.

In nucleus and multiplier holdings, serological surveillance involved an equivalent number of breeding pigs in 2014 compared with 2013, but the average number of samples per holding was slightly higher. This serological surveillance guarantees the disease-free status of the population of breeding pigs in nucleus and multiplier herds in France. At the herd level, the 311 herds that tested negative attest to the disease-free status of the nucleus and multiplier holdings at a prevalence threshold of 1% at a 99% confidence level. However, the actual number of breeding pigs tested per herd (average of 17 pigs) can only detect a minimum within-herd seroprevalence rate of between 15 and 20% at a 95% confidence level.

Of all the holdings that fell under serological suspicions of CSF ($n=8$, but the precise Figure is not available, in particular for suspicious cases at the slaughterhouse), an APMS was issued for only six of them. As a reminder, any case of serological suspicion must be placed under APMS, though the constraints imposed vary in terms of restrictions on animal movements (Box). Nevertheless, it is useful to be able to adjust management measures implemented in "suspicious" holdings in light of the favourable disease status in France and the risk of introduction. In 2012, regulations introduced the concepts of "high" and "low" serological suspicion.

In parallel, outbreak surveillance led to the reporting of two clinical suspicions in wildlife and just one in livestock, which was placed under APMS (three had been notified in 2013, one in 2012, two in 2011, four in 2010 and none in 2009). This may reflect a low level of vigilance, in spite of the current international health situation. Over the past few years, the low number of reports of suspected swine fever may be related, at least in part, to reluctance to accept the consequences of a suspicion. Yet, the NRL can issue a first series of results within 48 hours of receipt of the samples if acceptable delivery lead times to the NRL are respected, which enables the lifting of restrictions placed on movements following a suspicion. One of the main hurdles may also be the number of samples that need to be taken in holdings (a large number of blood and organ samples).

This vigilance is even more important given the existence of low-virulence CSF strains of the virus that can lead to the onset of attenuated clinical signs, while CSF is still present in Europe. CSF outbreaks in pig holdings were reported in Hungary, Latvia and the Russian Federation in 2013, and seropositive cases were also detected in 2012 and 2013 in wild boar in Croatia. Other cases were reported in wildlife in Hungary, Latvia and the Russian Federation in 2014. An outbreak was reported in a backyard herd in Latvia in June 2014, the previous case dating back to November 2012. An outbreak of CSF in wildlife was also notified in Ukraine in early 2015.

In addition, ASF, which has been present in Sardinia for 35 years, crossed the eastern borders of the European Union in 2014, with 256 cases recorded in the four countries affected (Arsevska *et al.*, 2014, Le Potier *et al.*, 2015; short articles from the international health watch in the Resources Centre of the ESA Platform: <http://www.platforme-esa.fr/>). ASF has become established in the Caucasus where it is now enzootic in domestic pigs and in wildlife. ASF also appeared in wild boar in Poland (February 2014), Lithuania (February 2014), Latvia (June 2014) and Estonia (September 2014), and in domestic pig holdings in Poland, Lithuania and Latvia during 2014. ASF was also reported in Ukraine in 2014. These outbreaks continued into 2015 (Le Potier *et al.*, 2015).

The serological study at the slaughterhouse carried out in Corsica was an opportunity to raise awareness yet again among stakeholders about the risk of ASF in Corsica (Desvaux *et al.*, 2014). Two clinical suspicions in livestock had subsequently been notified in 2015 in Corsica at the time of writing this article (May 2015). An evaluation of the ASF surveillance scheme in mainland France and Corsica was

also carried out in 2014 in the framework of the ESA Platform by the OASIS flash method (Dominguez *et al.*, 2014, http://www.plateforme-esa.fr/images/documents/oasis/procedure_oasis_flash_v3.pdf). This evaluation helped identify the strengths of the scheme, such as the reinforcing of its central structure or the revitalising of surveillance in wildlife, and pinpoint cross-cutting and common areas to be strengthened in terms of surveillance capabilities for exotic Category 1 health hazards. Nevertheless, it is apparent that some farmers are reluctant to accept the outbreak surveillance scheme, resulting in substantial gaps in coverage. It would also seem wise to break down the early detection objectives to match each of the possible means of introduction. A plan of action for ASF is being prepared on the basis of the results of this OASIS flash evaluation, the ANSES Opinion No. 2014-SA-0049 on the situation and the risk of emergence of various swine fevers in France, and the recommendations of the Food and Veterinary Office (FVO) on the emergency response plans.

In 2014, CSF surveillance measures in wildlife were still being enforced in the former infected zone in the Northern Vosges (which has now become a high observation zone (ZOR)), following detection of seropositive juvenile wild boars. Due to the favourable change in the situation in wildlife in this zone (absence of new cases and decrease in seroprevalence), the surveillance scheme has been modified with systematic virological analyses being discontinued and voluntary sampling pursued in the zone concerned. In this context, hunters continue to take samples and, although there have been changes in sampling distribution, samples have been taken from all municipalities in the ZOR as part of hunting activities. Since vaccination was discontinued, seroprevalence in the ZOR has decreased, although the presence of antibodies in juvenile wild boar raises questions about the potential persistence of the CSF virus in this zone (Rossi *et al.*, 2013). The results observed so far, i.e. absence of seroconversion observed in 134 captured, marked and recaptured individuals between July 2013 and June 2015, seem to lend support to the presence of maternal antibodies (Rossi *et al.*, 2015a; Rossi *et al.*, 2015b).

All of these data therefore suggest a favourable health situation in the ZOR. These observations provide further support for relaxing the programmed surveillance scheme, in conjunction with enhanced outbreak surveillance that should be advocated and re-initiated in the two *départements* concerned (i.e. Bas-Rhin and Moselle). To this end, the ONCFS decided to begin by meeting with the players in the SAGIR network in order to identify the logistical and human constraints to the collection of dead wild boar, and to find solutions, and then subsequently to coordinate with its partners (SAGIR contacts, Diagnostic test laboratories, DDecPPs) to define the information and alert circuits. In the Northern Vosges, a first meeting was therefore held in each *département* in January 2015. Initial difficulties were reported concerning the collection of wild boar and the sending of samples to the accredited laboratory. Solutions to the logistical problems (in particular the use of temporary storage places) and means of communication *via* the local departmental hunting associations (FDCs) were considered collectively by the participants present at the meeting. Different actions are still to be implemented before the strengthening of outbreak surveillance can become operational: provision of freezers, publication of articles in communication journals distributed by the FDCs, use of sampling kits to be distributed to hunters who collect wild boar carcasses from the roadside for their own consumption, definition of circuits of information between all the players concerned by this wildlife surveillance.

One of the medium-term goals of the CSF/ASF surveillance programme in domestic pigs is to redefine the surveillance plan in slaughterhouses, to take into account the expected levels of prevalence in pig holdings for low-virulence strains of the CSF virus (which are not easily detected clinically), estimated using a mathematical model developed by the ANSES Ploufragan Laboratory. Meanwhile, the entire pig and pork industry is encouraged to maintain its vigilance with respect to swine fevers and promote effective outbreak surveillance, thereby guarding against the spread of classical or African swine fever through the implementation of suitable health control measures as soon as they are detected.

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